

ASID PRODUCTIVE SOLUTIONS:

The Impact of Interior Design on the Bottom Line

A Professional Paper from:

American Society of Interior Designers

3M

Cooper Lighting

DuPont

Haworth

Masland Carpet

“The most pressing social and economic challenge now is to raise productivity among knowledge and service employees.”
Peter Drucker (from an article in *Harvard Business Review*)

“Physical location issues are neither plain nor vanilla. In fact, space management may well be the most ignored -- and most powerful -- tool for inducing cultural change, speeding up innovative projects, and enhancing the learning process in far-flung organizations.”
Tom Peters (from his book, *Liberation Management*)

FOREWORD

In today's increasingly competitive global business community, companies are looking for every available tool to help them improve employee productivity. Effectively designed office interiors can help companies improve operational efficiency. A growing number of companies are realizing the benefits of working with a skilled interior design professional to help them develop a highly functional and attractive office environment.

The American Society of Interior Designers (ASID) recently asked 200 business decision makers -- 100 at fast-growing small and mid-size companies and 100 at the largest 1,000 U.S. companies -- their opinions about productivity issues in an independent research survey conducted by L.C. Williams & Associates. The survey revealed that an overwhelming 90 percent of respondents believe that improvements in office design can increase employee productivity.

In addition, 68 percent of survey respondents say that office design needs to be reviewed at least once every five years to help their companies remain competitive. Furthermore, 36 percent say that office design should be reviewed at least once a year. This shows that business decision makers recognize that effective interior design contributes to corporate competitiveness, as well as helping companies adapt to changing business conditions.

Companies do not have to put up with inefficient office designs that are uncomfortable, outdated and unproductive. This paper demonstrates that interior designers can help companies improve employee productivity and overall corporate efficiency by developing office spaces that *work*. Interior designers also can help companies integrate interior design into their strategic plan. Interior designers are the experts who can develop "productive solutions" that help companies boost their bottom line.

-- Kathy Ford Montgomery, FASID
National President
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OVERVIEW

Productivity is a vital issue in corporate America. With an increasing number of companies downsizing, restructuring or making other major operational changes, business decision makers are looking to office design as a tool that will help individual employees -- and the company as a whole -- work smarter and more efficiently. An increasing number of companies are focusing on the physical work space as a key component of their corporate strategy to improve productivity -- rather than looking at office facilities only as an expense.

In the quest for increased productivity and profits, many companies are reorganizing their business strategies. Unlike the 1980s, when companies expanded their real estate assets and increased their corporate holdings, companies today have streamlined their operations, reengineering the way they run their businesses to improve efficiency and profitability. With real estate costs representing an average of 25 percent of the assets of a large company, management is closely scrutinizing the investment and considering alternative methods for reducing costs and saving space. These economic changes have fueled the drive toward improving space efficiency in the workplace.

Increasing productivity involves more than just downsizing space and staffing. If cost cutting produces an uncomfortable, poorly planned and inefficient work environment, the amount of money saved may be outweighed by the negative impact on employee productivity, including low morale, increased absenteeism, lack of creativity, more errors and poor internal communication.

Rather than just looking to save space or money, “right-sizing” and office redesign provide companies an opportunity to create a better “fit” between the work space, employees and the tasks that they accomplish. Companies obtain far-reaching benefits by eliminating obstacles to productivity and providing employees with functional, healthy and attractive surroundings.

Numerous studies have indicated that improving office design can play an important role in increasing employee productivity. ASID and five of the leading manufacturers of office systems and products -- 3M, Cooper Lighting, DuPont, Haworth and Masland Carpet -- have joined together to launch an industry research initiative to further examine the relationship between office design and employee productivity.

Because interior design professionals make such a significant impact on the configuration of today’s workplace, methods to enhance productivity have particular relevance for their consideration and application.

This paper provides the key findings of the research initiative undertaken by ASID and its Industry Partners, including:

- *A brief analysis of interior design issues that impact office employee productivity*
- *A discussion of four elements that play a role in developing a productive office design -- ergonomic products, lighting, furniture and carpeting*
- *And insights from other research efforts and project case studies that demonstrate of interior design on employee productivity*

LOOK AT OFFICE DESIGN TO IMPROVE PRODUCTIVITY

There are many different factors that companies look at to measure increased productivity and related bottom-line benefits. These include:

- *Increased production or sales per employee*
- *Better quality and fewer errors*
- *Faster completion of tasks*
- *More effective work teams*
- *Less absenteeism and fewer days lost to injury or illness attributable to the work environment*
- *Reduced employee turnover*
- *Improved employee satisfaction with the work environment*
- *Greater customer satisfaction*

An article in *Business Week* (December 9, 1996) reported that total business productivity in the United States has risen at an annual rate of only 1.1 percent. After investing billions of dollars in improving employees skills and providing new technology, the emerging trend is for companies and the government to focus on improving the physical workspace to increase productivity.

More than 300 corporate and government executives, interior designers, architects and product manufacturers met in Washington, D.C. in November 1996 for the first annual National Summit on Building Performance. One key finding from a survey of summit attendees shows increasing focus on the physical work space:

- *Summit attendees overwhelmingly agreed that high quality office buildings can increase employee productivity by 10 to 20 percent*

To dig deeper into the relationship between office design and productivity, ASID and its five industry partners had an independent firm conduct a qualitative research survey in late 1996 and early 1997. The “ASID 200” survey included telephone interviews in which 200 business decision makers -- 100 from fast-growing small and mid-size firms and 100 from the 1,000 largest corporations -- were asked their opinions about productivity. Respondents, including CEOs, presidents, COOs, CFOs and facility managers, say improved office design increases employee productivity. The survey findings were clear:

- *90 percent of the “ASID 200” respondents say that improving interior design can boost productivity*
- *Business decision makers ranked improving office design and incorporating new technology at the top of their lists of the top ways to boost productivity*

Other contributors to productivity mentioned by respondents included promoting a team atmosphere, good communications and process efficiencies. Other studies have produced similar findings:

- *97 percent of respondents say it is worth the investment to redesign offices if a correlation can be made to increased employee productivity, and 93 percent say the design and physical structure of offices impacts productivity, as stated in a 1996 survey of Fortune 1000 senior executives by Hixson Architects/Engineers /Interiors.*
- *Improvements in office layout, computers and thermal comfort are the top contributors to increased productivity, according to a 1996 Fortune magazine survey.*

HOW INTERIOR DESIGN IMPACTS PRODUCTIVITY

The “ASID 200” respondents identified the following four primary areas in which interior design impacts productivity:

- *Improving accessibility*
- *Increasing employee comfort*
- *Increasing privacy, including limiting noise and distractions*
- *Providing flexibility and customization*

A growing body of corporate case studies offers conclusive evidence of the positive impact office redesign can provide on productivity. For example . . .

- *A Detroit-based insurance company designed its new office to incorporate team structures, ergonomic furniture, improved privacy and new state-of-the-art environmental systems. Pre- and post-occupancy evaluations showed a 137 percent decrease in time required to process client paperwork, a 9 percent drop in errors and defective claims, and a drop in absenteeism to 1.6 percent from 4.4 percent.*
- *Bank of Boston improved work performance, allowing the company to perform the same amount of work in 30 percent less space with 25 percent less staff by extensively renovating its new leased building. The project paid for itself in less than two years and created a showpiece to attract new clients and further improve the business units’ profitability.*
- *Ford Motor Company has brought internal team members and supplier representatives together into new “vehicle centers” that provide better communication, higher productivity and faster product development.*
- *Sun Microsystems redesigned its offices to improve productivity and gained an effective recruitment tool.*

Of course, there also are instances in which ineffective interior design presents obstacles to productivity. But if companies can improve the number of employees who are satisfied with their office environment, they can put themselves in a position to realize significant gains in employee productivity.

HOW ACCESSIBILITY IMPACTS PRODUCTIVITY

When asked about office design changes, 68 percent of the “ASID 200” respondents say they increased productivity by making resources -- including people, information and equipment -- more accessible to employees. Survey respondents successfully implemented the following interior design changes to improve accessibility:

- *Group team members together or establish a customized workspace where team members can communicate and collaborate*
- *Improve access to information and resources, such as office equipment, and provide a logical office layout so employees can easily find who and what they need, when they need it*
- *Convert to an open office design that reduces or eliminates communication barriers*

Faster decision making

Speed is becoming increasingly important in business today. Accessibility plays a key role in accelerating the decision making process by supporting management’s efforts to push decision making power down in the ranks and helping empowered teams of employees work more efficiently. As more managers begin to embrace collaboration and flexibility as a way to increase productivity, they will value environments with fewer or no physical barriers.

Team building

Team work helps accelerate decision making and improve efficiency, and interior design can play an important role in the effectiveness of work teams. Companies today are placing a great deal of emphasis on team development, and many of them have realized that interior designers can provide effective office design solutions that help team members work better together.

A variety of studies have shown that when people work without walls and in close proximity to one another, communication becomes more frequent, managers are more accessible and productivity rises. Research and case studies show that improved accessibility, proximity and communications help increase productivity, including a clear link between higher density of workstations and higher employee productivity levels.

Open office plans

One of the most popular ways in which interior designers support team development and improve accessibility, is by helping companies implement open office plans with smaller work areas organized so team members are close together.

- *The average office plan in a U.S. or Canadian company has a mix of 52 percent open plan, 38 percent enclosed and 10 percent bullpen design, says a 1997 report from the International Facility Management Association (IFMA).*
- *About one-fourth of office space is laid out on the basis of some kind of systematic open-plan design, according to the National Office Products Association, and the trend is expected to continue.*
- *Employees will see the size of their personal work areas decrease up to 80 percent by the next century, according to industry experts.*

Accessibility is vital to providing productive communications within companies. Hewlett-Packard, the computer company that coined the phrase “management by walking around,” has eliminated all private offices in its facilities. Even the CEO in the headquarters building in Palo Alto, Calif., has an open cubicle -- with no door.

According to the *Handbook of Project Management*, published by the American Marketing Association, “Teamwork enables organizations to be nimbler, more flexible, and better able to respond swiftly and creatively to the challenge of today’s competitive business environment.”

Clearly, accessibility will remain a critical issue for many years to come. Interior designers can and will help companies meet this need by developing customized design solutions.

HOW COMFORT IMPACTS PRODUCTIVITY

Comfort was another key issue for the “ASID 200” respondents -- 42 percent say they improved productivity by changing their office design to improve employee comfort. Survey respondents successfully implemented the following interior design changes to improve comfort:

- *Provide appropriate furniture and desk configurations*
- *Improve lighting*
- *Attend to ergonomic needs*
- *Make the work area more aesthetically pleasing, comforting and inviting*

Ergonomics

This is a important issue for federal and state officials. The State of California Occupational Safety and Health Standards Board has adopted the nation’s first ergonomics standard. In addition, the Occupational Safety and Health Administration (OSHA) and other federal agencies are considering national standards.

As the American workforce continues to get older, ergonomic needs become even more critical. Addressing ergonomic issues also helps companies decrease their liability risks. In addition, some companies may be legally required to provide ergonomic furniture under the Americans with Disabilities Act.

Companies also are looking to create “employee friendly” work environments to reduce discomfort and distractions that hinder employee productivity. Uncomfortable offices take a big bite out of corporate America’s bottom line by producing a variety of ailments, including headaches, pain and strains on the eyes, wrists, hands, arms, back and neck. The following statistics illustrate the severity of the problem:

- *Cumulative trauma disorders (CTDs) -- including carpal tunnel syndrome, tendinitis and other repetitive motion injuries -- accounted for about 56 percent of workers’ compensation claims reported to the U.S. Bureau of Labor Statistics in 1993.*
- *CTDs increased by 1,125 percent from 1981 to 1992, resulting in losses to businesses of \$30 billion in medical costs and wage benefits -- and CTDs continue to increase at an average annual rate of more than 25 percent.*

- *More than 10 million people suffer from computer-related injuries to some extent, according to researchers at Purdue University in West Lafayette, Ind.*
- *By the year 2000, one-half of all office workers may suffer symptoms of CTDs, according to the National Institute of Occupational Safety and Health (NIOSH).*

Clearly, work space ergonomics can either help or hinder employee comfort, health, well-being, safety and productivity. A key to creating an “ergonomically correct” environment is providing individual employees with a greater degree of control over their office environment by providing adjustable products and systems.

Current research seems to indicate that the more people can control their office environment, such as lighting, furniture and temperature, the more likely they are to be satisfied with their job and achieve greater productivity.

For employees to get the maximum benefit from new ergonomic products, interior designers recommend that companies provide training on proper posture and correct use of the equipment. Potential sources for this training include interior designers, product suppliers, providers of workers’ compensation insurance and independent consultants -- such as ergonomists.

Numerous studies indicate a direct link between ergonomically designed furnishings and increased employee productivity. These findings include:

- *Employee productivity improved 20.6 percent one year after ergonomic furniture was installed, in a study by the U.S. Army Corps of Engineers.*
- *Employee performance increased 23 percent and health complaints were reduced 50 percent by using ergonomic office equipment in a recent study by NIOSH.*
- *15 to 27 percent gains in productivity were realized by ergonomic adjustments in office design and equipment, in a study at Miami University in Oxford, Ohio.*

In addition, proactive measures to prevent ergonomic problems before they start have spared employees needless pain and injury while saving companies millions of dollars in potential workers’ compensation claims. These companies have seen that investing in comfortable, healthy and safe work spaces provides significant benefits.

- *For every \$1 spent to improve ergonomic conditions, Ford Motor Company received a return-on-investment of \$6, according to an ergonomist at the company.*

Lighting

Lighting is a critical issue in creating a comfortable environment because almost all office tasks are visually oriented. Two factors have greatly complicated office lighting requirements. First is the growing proliferation of computers. There are currently more than 57 million visual display terminals (VDTs) in offices across the U.S., including computer screens and similar devices, and the lighting needs for screen-based tasks are much different than for paper-based tasks. In addition, widespread conversion to open office designs has resulted in great changes in lighting requirements compared to partitioned offices. Thus, the need for a coordinated, integrated approach to lighting has never been more pronounced.

A growing body of research links the presence of glare, caused by light bouncing off the VDT screen and directly into a user's eyes, and various productivity-robbing conditions, including severe eye strain, headaches, discomfort and fatigue. These problems impair performance and require the worker to take more frequent breaks away from the screen. The cumulative effects produced by an uncomfortable lighting environment produces "significant differences in performance," according to studies by the Lighting Research Center at Rensselaer Polytechnic Institute in Troy, New York. Other studies provide additional hard evidence:

- *The average VDT user loses 62.5 hours of on-the-job time every year due to eye strain.*
- *75 percent of participants in a survey of newspaper employees say glare reduces their productivity, and 80 percent of office employees in another survey complained of glare at least occasionally.*

Experts agree that most offices today are overlit -- which produces glare and wastes both money and energy -- even though numerous studies show that employees prefer and are more comfortable working under lower light levels. The best way to avoid these problems is to implement a comprehensive lighting program under the direction of an interior designer to provide proper illumination for all employee tasks. The following findings show the benefits of proper lighting:

- *Employee productivity gains of 6 percent to 16 percent and reduced absenteeism were achieved by converting to improved lighting as part of an overall energy management program, in a study by the Rocky Mountain Institute in Snowmass, Colo. and the U.S. Department of Energy.*
- *Daytime-simulating light helped improve cognitive performance of night-shift workers in studies by the Lighting Research Center.*

When companies make lighting decisions, it is important to recognize that different activities require different levels of light. However, when companies lower lighting levels, experts recommend providing employees with individual task lighting, preferably with adjustable controls, for greater comfort and flexibility. Experts agree that natural light is the best overall source of office illumination, so many companies are now redesigning their facilities to eliminate window offices and create “light corridors” that are shared equally by all employees.

Indoor air quality

Chemical emissions from paint, carpeting and other materials pose serious health concerns, and well-publicized cases of “sick building syndrome” further illustrate the impact of poor indoor air quality. These problems have led OSHA and other federal government agencies to consider development of national indoor air quality (IAQ) standards. The following statistics reflect the severity of the problem:

- *Businesses pay \$15 billion a year in direct medical costs due to problems related to indoor air quality, according to the American Journal of Medicine.*
- *Businesses lose an estimated 60 million work days each year due to problems related to indoor air quality, according to the U.S. Environmental Protection Agency (EPA).*
- *20 percent of the U.S. population suffer from allergies and have a heightened sensitivity to airborne contaminants.*

HOW PRIVACY, NOISE REDUCTION IMPACT PRODUCTIVITY

Limiting noise and distraction, while increasing privacy, was cited by 28 percent of the “ASID 200” respondents as helping improve employee productivity. Survey respondents successfully implemented the following interior design changes to improve privacy and noise reduction:

- *Change floor plans to minimize auditory or visual distractions, and increase the amount of personal space*
- *Control acoustics to minimize conversational noise and other auditory distractions*
- *Design spaces to provide the appropriate level of privacy based on the task to be performed -- even to the point of providing special rooms for tasks that involve increased concentration or confidentiality, and require the highest degree of privacy*

Privacy and noise reduction relate, in part, to the emotional aspect of creating a comfortable, healthy and safe office environment. Achieving these goals requires addressing a number of questions, including:

- *Can communication be understood by the desired person(s) when necessary?*
- *Is the type or volume of sound in the office annoying or distracting?*
- *Can confidential conversations be overheard by others?*
- *Do employees have sufficient privacy for tasks that require a high degree of concentration?*

Some industry observers have cited poor office acoustics as the “number one barrier” to increasing productivity in open offices. Many studies illustrate the severity of this problem.

- *70 percent of respondents say their productivity would increase if their offices were less noisy, according to a recent study completed for ASID by the Yankelovich Partners.*
- *54 percent of employees in a recent field study, cited in the book Environment and Behavior, say they were bothered often by noise.*

There also is clear evidence that office employees can be more productive if they are not disturbed by unwanted noise or other distractions. This is supported by a number of research reports and case studies, including:

- *Office employees reported that their perceived effectiveness increased an average of 13 percent by reducing noise from background conversations, office equipment and mechanical systems, in a recent field research project jointly conducted by Armstrong World Industries and Dynasound. Project participants included Blue Shield of California, Ford Motorland Services Company, Honeywell, IBM Canada and U.S. Navy Federal Credit Union.*
- *An estimated 26 percent gain in productivity or organizational effectiveness would be produced by reducing office noise, according to 400 managers interviewed in a recent study by the Building Owners and Managers Association (BOMA) and the University of Maryland in College Park.*

It also is important that privacy and acoustical needs should be addressed according to the context -- the specific tasks to be performed in a particular area. For example, people in telemarketing typically need far less privacy than an accountant. Interior designers work with end users to customize privacy and acoustical conditions to meet their individual needs.

For additional information on acoustics, noise reduction and privacy, contact ASID and ask for a copy of the *Sound Solutions* professional paper.

HOW FLEXIBILITY IMPACTS PRODUCTIVITY

Nearly one quarter of the “ASID 200” survey respondents say they improved productivity by improving flexibility. Survey respondents successfully implemented the following interior design changes to improve flexibility:

- *Provide flexible layout or design according to function*
- *Provide increased access or privacy according to function*

Being flexible and customizing spaces to cater to individual needs helps companies create an environment where employees feel valued and removes restraints that may hinder employee productivity. Ultimately, flexible interior design helps the entire company adapt to changing customer needs and stay ahead of competitors.

Flexibility is important, because companies -- and their interior designers or space planners -- often must deal with disparate needs, such as achieving the right balance between accessibility/open communications and privacy, or the right balance between personalization of individual offices and adherence to corporate standards. Flexibility also means designing offices that are adaptable to meet future needs.

Alternative officing

Companies need to balance accessibility and privacy needs. Many of them are addressing this challenge by implementing alternative officing strategies that provide greater flexibility. Modified office standards is one of the two most common ways that companies are improving productivity and optimizing work space, according to a 1995 study by the International Facility Management Association (IFMA) and Haworth. The study says free address, hoteling and shared space strategies most often yield cost savings, while group address strategies, project team environments and activity-based settings (such as conference areas) provide productivity increases.

One increasingly popular alternative officing strategy is the “caves and commons” strategy developed by Apple Computer for its research and development complex in Cupertino, Calif. They combined individual spaces where team members can be alone to do their thinking and planning (caves) and group spaces (commons) where team members can come together to collaborate on projects. Many companies, such as IBM and AT&T, have designed new facilities that incorporate flexible, easily reconfigured spaces for individuals and teams.

The trend toward alternative officing often leads to smaller and less elaborate offices that provide greater flexibility and, in many cases, more technology to accommodate varying needs of different employees. Companies today also are placing increased emphasis on finding ways to reduce the cost of the office space they are leasing or building. Flexible office designs help companies optimize their space.

STRATEGIC INTERIOR DESIGN AND SPACE PLANNING

Numerous research studies indicate that the majority of corporate strategic plans do not include real estate and work place objectives. Part of the reason for this may be reporting structures. According to research conducted at last year's National Summit on Building Performance, most facility executives feel they should report directly to the CEO.

- *65 percent of senior executives at Fortune 1000 firms do not have systems in place to measure return-on-investment relating to office facilities or employee productivity, according to a study by Hixson Architects/Engineers/Interiors*

A strategic approach to office interior design, one in which design goals are integrated with the company's strategic business objectives, can facilitate and, in some cases, drive reengineering of work processes. It also can encourage teamwork, help flatten hierarchies and produce other cultural changes within a company.

Strategic approach

Interior design consultants are professionals who combine knowledge of client business goals and employee work patterns with design and product knowledge. Their knowledge can play a critical role in helping companies take a strategic approach to space planning and interior design.

Companies can offset the possible adverse effects of cutbacks, including smaller work spaces, fewer amenities or moving to a less expensive space, by providing a work environment designed around human needs. This involves strategically tailoring the physical work space to the technical, functional, interactive and psychological requirements of employees' tasks. Clearly, professional interior designers can play an important role in helping companies adopt this approach.

Facilitation

Interior design consultants also can help companies by facilitating a more interactive design approach. Rather than simply asking users what they want, a strategic, interactive design process empowers employees to participate in design decision making and makes managers more aware of the interaction between space and human behavior.

Interior designers can help facility managers facilitate a participatory design process through various means, including environmental feedback surveys, planning workshops and environmental simulations such as drawings, three-dimensional models and videos. In some cases, interior designers or facility managers may serve only as a resource or consultant, empowering employees to decide for themselves what type of environment will make them more productive.

An interactive design approach enables work teams to reengineer their tasks to eliminate inefficiencies, including excessive storage and unused space. It also makes

employee effectiveness and morale a priority in space planning and design, and allows managers to play a more forceful role in helping people derive maximum advantage from their physical work space. This approach helps integrate interior design goals with the company's strategic business objectives. It also generates a greater sense of involvement and ownership while reducing wasted effort and costly changes.

Jacqueline Vischer, in her article, "Strategic Work Space Planning," published in *Sloan Management Review*, advocates a number of "radical" steps to help companies take a more strategic approach to space planning and interior design. Her recommendations include:

- *Position facility managers as agents of change -- see space planning and interior design as "part of the solution, not part of the problem."*
- *Teach managers to incorporate space considerations into their strategic thinking.*
- *Include facility managers and space planners as part of the top management team.*
- *Manage interior design as an integral, rather than adjunct, function of the business -- make space planning a legitimate responsibility of the business team.*

CHANGING CORPORATE CULTURE “BY DESIGN”

Offices have undergone a tremendous revolution in the past two decades. With the advent of the computer and other new technologies, the way we work and how we measure employee productivity have completely changed. Since the mid to late 1980s, companies have abandoned the hierarchical organization,. As a result, palatial executive offices and status-symbol furniture are out.

A survey of 150 senior executives at *Fortune 1000* companies by Hixson Architects/Engineers/Interiors further illustrates this trend:

- *75 percent of the respondents say they would give up their offices if they knew it would enhance their companies' productivity.*
- *Three out of four respondents also agreed that today's offices are viewed more as high-tech tools to achieve business goals than as status symbols.*

Shifting structures

A shift in corporate thinking has altered office space planning. As companies decentralize their corporate organizational structure, they are reshaping the way office space is designed and used. Corporations are no longer vertical, they are horizontal.

In the interests of flatter hierarchies and improved team spirit, some companies are considering adopting uniform office space standards for all employees, regardless of title or seniority. Other companies are looking to adopt alternative officing strategies, such as hoteling.

To help companies implement these changes, interior designers help companies replace their status-based approach to interior design with a task-based approach that helps optimize employee performance and improve morale. To accomplish this, interior designers work with facility managers to help employees and managers see individual work spaces as their tool rather than as their territory. It also involves “deconstructing” work processes so that task requirements, rather than individual needs, become the focus of space planning and interior design decisions.

HOW INTERIOR DESIGNERS IMPROVE PRODUCTIVITY

The right work environment meets the needs of the company as a whole and of the individual employee. This approach looks at space planning in the context of the tasks to be performed. Increasingly, companies are turning to interior designers to help them improve employee productivity. Because productivity measures often are task-oriented, interior designers must develop an understanding of how, when and where individual employees and teams do what they do. They use this knowledge to create an office design that is both highly functional and attractive.

Knowledge-based design

Professional interior designers play a vital role in helping companies meet their needs within each of the strategic areas highlighted by the “ASID 200” study -- accessibility, comfort, privacy and noise reduction, and flexibility. They have in-depth product knowledge and the training and expertise to specify the appropriate mix of products and integrate them into a design that solves each client’s particular needs. Professional interior designers work closely with both upper management and end-users to develop customized design solutions that are highly functional and attractive, while providing space efficiency and optimizing client budgets.

Interior designers analyze the client’s current situation, their goals and various tactics to help them achieve their goals. Then they gather information about the overall office environment and how people work in particular areas, analyze the information and develop a design solution.

Interior designers develop office interiors that incorporate end-user input -- rather than imposing design decisions upon them. This approach helps end-users adapt more readily to design changes and minimizes their resistance to changes.

Professional interior designers also educate clients. In some cases, this includes conducting in-service staff training programs to show employees the right way to use their ergonomic systems and products so they will obtain the desired benefits.

Interior designers as consultants

Increasingly, businesses are looking to interior designers not just for design guidance, but for consultation on how to use interior design and space planning as a strategic tool that provides bottom-line benefits.

To serve as “interior design consultants,” professional office interior designers must work closely with their clients. This means understanding how the company works, what its philosophy and goals are, and how the company functions -- both internally and externally.

In this emerging role as consultants, interior designers help facility managers and other corporate executives develop and measure interior design goals that are tied into the companies' strategic plan. In addition, interior design consultants can help companies effectively incorporate interior design and space planning issues into their annual review process.

Some interior designers also provide periodic follow-up design reviews to make sure each office design or redesign project is continuing to meet the client's needs. If needs change significantly, interior designers can help business decision makers modify their office interiors to keep in step.

THE ROLE OF FURNITURE IN IMPROVING PRODUCTIVITY

There is a growing trend of companies switching from partitioned offices and free-standing furniture to open offices with modular systems furniture and panel systems that provide greater flexibility, reduced cost and improved space utilization. This systems make it easier to meet changing needs for individuals, teams and departments. Incorporated in open plan offices, these systems eliminate the need for separate HVAC ducts in each workstation, allow lighting to illuminate multiple workstations at once and reduce maintenance, cleaning and electrical labor charges.

Accessibility vs. privacy

Balancing accessibility and privacy needs is a challenge for many companies. Modular systems furniture and panel systems can be reconfigured to create “open work areas” or “privacy zones” quickly and easily. Shorter panel heights (less than 45”) provide easy communication for group work. Slightly higher panels (about 56”) provide privacy when employees are seated, but allow a clear line of sight when they are standing. Higher panels (82” or floor-to-ceiling designs) significantly reduce auditory and visual distractions and provide greater privacy. Some systems offer interconnecting and curved work surfaces that provide higher density than traditional square cubicle arrangements, as well as improved privacy without hindering communication or visual contact with supervisors.

Wire and cable management

Computers, lighting and other electronic systems are critical in today’s technology-driven offices, so systems furniture and panel systems are designed for efficient wire and cable management to support these systems. Some systems furniture can be configured with a central “spine” through which all wires are run. This feature permits easy reconfiguration requiring significantly less time and money. Some modular panel systems provide flexibility to access power and communications lines at the baseline, beltline and standing height positions. Upgrades are easily handled.

Mobile office

Employees can literally take their office with them to team meetings or other in-house activities with the latest functionally independent, modular component furniture systems. These systems can be readily reconfigured to support multi-tasking or adapt to changing tasks for maximum flexibility and space utilization. Electronic equipment is easily connected and disconnected, and the systems offer a high degree of customization to meet individual needs. Also, mobile furniture in one area can be moved without affecting furniture in an adjacent area. The latest developments include fully self-contained furniture systems (about half the size of a vending machine, when closed) that function as a temporary office on wheels.

THE ROLE OF LIGHTING IN IMPROVING PRODUCTIVITY

Computers create unique lighting challenges for offices. As a result, the Illuminating Engineering Society of North America (IESNA) and the American National Standards Institute (ANSI) have developed the lighting industry's only recognized Recommended Practice (RP) standards for lighting in offices with computers or other video display terminal (VDT) systems. Following are the ANSI/IESNA RP-1-1993 recommendations:

Illuminance

A maximum of 50 footcandles (500 lux) of general lighting on the work plane for work areas that combine paper and screen-based tasks. If work is primarily screen-based, or if additional task lighting is provided for paper-based work, lower general illuminances may be appropriate.

Luminance balance

Windows, brightly colored walls and other high-luminance surfaces can reflect in computer screens, causing distraction and eye strain. These surfaces should be similar in brightness to limit the intensity of screen reflections and improve visual comfort. Following are recommended maximum luminance ratios:

- *Screen- and paper-based tasks* 3:1 or 1:3
- *Screen-based tasks* 3:1 or 1:3
- *Paper-based tasks, remote light surface* 1:10 or 10:1

Luminaire performance

- *Direct lighting -- select luminaires that do not exceed 850 cd/m² at 65 degrees, 350 cd/m² at 75 degrees, and 175 cd/m² at 85 degrees*
- *Indirect lighting -- select luminaires that limit maximum ceiling luminance to 850 cd/m² or less. In addition, maximum to minimum ceiling luminance ratios should not exceed 4:1 to minimize "stripes" reflected in computer screens.*

The latest industry development in fluorescent lighting fixtures is "total light control technology," a proprietary technology that completely eliminates glare by redirecting it away from the viewer's eye level to create a healthier, more comfortable and more attractive work environment. This new technology exceeds all IESNA recommendations and does not produce any light pollution, while yielding a visual comfort probability (VCP) as high as 98 percent or higher.

THE ROLE OF CARPET IN IMPROVING PRODUCTIVITY

Carpet plays an important role in helping create an attractive and inviting workplace. Interior designers can combine multiple colors, textures and patterns of carpet to create visual excitement, define specific work areas or to direct traffic in corridors and common areas. Carpet also has lower maintenance costs than other types of commercial floor coverings.

The inherent non-slip and cushioning characteristics of carpet contribute to a comfortable and safe work environment by reducing the likelihood of falls and minimizing potential injuries. These properties also may help lower insurance costs. The natural insulating properties of carpet keeps floors warm in winter and cool in summer to help reduce heating and cooling costs. Carpet also contributes to improved indoor air quality by acting as a natural filter, providing far greater efficacy than hard surfaces in removing dirt particles from the air.

In addition, carpet provides acoustical benefits by absorbing airborne sound, reducing surface noise generation (often called “footfall noises”) and helping block sound transmission to rooms below.

The trend in carpeting is for increasing specification of nylon-fiber carpets for their superior long-term performance, including improved resistance to staining, soiling, matting, crushing, texture loss and abrasive wear compared to other fiber materials.

Following are key criteria to use in selecting a carpet to meet your performance and budget needs:

- *Carpet fiber polymer: This is the basic substrate from which carpet fiber is made. Select based on the particular environmental conditions of the application. For example, carpets with solution-dyed nylon are best for areas that face extreme exposure to spills, sunlight or harsh cleaning agents.*
- *Fiber engineering: This determines the amount of surface area to which soil can adhere on a fiber. Quality nylon fibers are engineered to minimize surface area. Fibers also can be engineered in unique geometric shapes to diffuse light and minimize visibility of stains.*
- *Soil resistance treatments: These affect how readily carpet will release soil when cleaned. For high-traffic areas, some manufacturers offer treatments that can improve soil removal twice as much as untreated carpets.*
- *Carpet construction: This affects how well a carpet can retain an acceptable appearance under specific soiling conditions. For example, soil and lint or other debris are less visible on mid-toned, multi-colored and patterned carpets.*

THE ROLE OF ERGONOMIC PRODUCTS IN IMPROVING PRODUCTIVITY

The American National Standards Institute (ANSI), in conjunction with the Human Factors and Ergonomics Society (HFES), has created the most commonly accepted set of ergonomic recommendations (ANSI/HFES 100-1988). The recommendations deal with more than 100 different issues. Following are some general guidelines:

- *Eyes should be arm's length from the VDT screen*
- *Neck should be in neutral position -- tilt of less than 15 percent up or down*
- *Shoulders should be relaxed, but not slouching*
- *Back should be in a natural "S" shape, not bent forward*
- *Elbows should be close to sides, wrists in neutral position and fingers gently curved*
- *Knees should be bent at more than a 60 degree angle*

The human body was designed to move rather than to sit for long periods of time, so furniture manufacturers are researching new ergonomic chairs that encourage "active sitting," including more movement and intermittent standing, for better posture and reduced back stress. Following are some currently available ergonomic products:

- *Adjustable desks offer variable height, slant and keyboard levels for greater comfort and improved posture. Some can be programmed to adjust automatically to different workers.*
- *Ergonomic chairs and back supports offer adjustable seat height, tilt and lumbar support and arm rests to reduce fatigue. Some offer side and upper back support and height-adjustable arm rests that can be rotated 360 degrees.*
- *Articulating keyboard trays tilt, swivel and move up and down so workers can customize the position of their keyboard to reduced strain.*
- *Foot rests offer variable angles and heights to promote proper posture and relieve strain on the legs, back and neck.*
- *Gel-filled wrist rests for computer users encourage proper alignment of wrists and hands, and provide a soft, flat surface to reduce discomfort and fatigue.*
- *Scratch-resistant filters are placed over VDT screens to reduce glare and eye strain while preventing static charge and dust build-up. Some products reduce radiation and provide added privacy.*
- *Office air cleaners remove tobacco smoke, dust and pollen to improve indoor air quality.*

OFFICE FUNCTION IS MORE IMPORTANT THAN LOOKS

“Form follows function” is a common phrase among professional interior designers. They strive to create work spaces that will support the tasks to be performed, while providing a healthy and attractive office environment.

The “ASID 200” respondents stress the functional impact of interior design as being much more important than what their office design says or shows. Research seems to indicate that business decision makers consider it “a given” that they will get an attractive looking office when they hire a professional interior designer. Thus, functionality and operational efficiency -- rather than looks -- are the main driver when companies make office design and space planning decisions.

A growing number of companies are switching to spartan offices while upgrading their public areas. For example, Hewlett-Packard has abolished private offices in its facilities. However, the customer reception area at the company’s Wilmington, Del., facility, has leather furniture, large doors and intricate wood inlays.

BENEFITS OF PERIODICALLY RETHINKING OFFICE DESIGN

When asked how often companies should review their office design, 68 percent of the “ASID 200” say it needs to be done at least once every five years to help them remain competitive. In addition, 36 percent of survey respondents say that office design should be reviewed at least once a year.

Business decision makers clearly see that effective office design is a key to business success -- only 7 percent of respondents say they consider office design to be “unimportant.” This compares to an overwhelming 90 percent of respondents who say improvements in office design can increase worker productivity.

Additional findings provide support for the importance of rethinking interior design:

- *86 percent of the “ASID 200” respondents say that it is important for a company to appear flexible, adaptable and forward-thinking.*
- *However, only 15 percent of respondents believe that their office design currently communicates that image.*
- *67 percent of the “ASID 200” respondents say that redesigning their office would show employees, clients and competitors that their company is flexible, adaptable and forward-thinking.*

Professional interior designers recommend that clients make interior design a part of their annual review process. This involves thinking about what can be done to optimize the performance of their interior design -- not necessarily completely redoing the design.

In addition, a growing number of companies are realizing bottom-line benefits by working with interior designers who serve as consultants, helping them integrate interior design planning with their strategic planning efforts. Addressing office design as a part of the overall strategic planning process can help companies improve their competitiveness and adapt more readily to changing market conditions.

When it comes to strategic planning, companies are looking for practical problem-solving approaches. The education and training of interior designers and the approach they take in developing office designs makes them uniquely qualified as strategic partners to help companies achieve their strategic objectives.

CONCLUSION

The research and experience of ASID and the Industry Partners involved in this initiative -- 3M, Cooper Lighting, DuPont, Haworth and Masland Carpet -- as well as numerous other research projects and case studies demonstrate that properly designed offices can improve employee productivity. Interior design consultants help by providing knowledge of client companies and their individual employees along with design expertise and in-depth product knowledge. This knowledge enables interior design consultants to serve as strategic partners, vital to helping companies achieve their bottom-line goals.

While designing for increased productivity sometimes costs more initially, it saves money long term. Business decision makers are recognizing that the payback from effective office design often outweighs the additional expense. For example, in many companies an increase of 1 percent in productivity can provide revenues that exceed the cost of an entire year's energy bill.

Just as there are many different ways in which companies determine and track their productivity, there will continue to be new product developments and design theories to help companies provide their employees with accessibility, comfort, privacy and flexibility so they can perform their tasks with increased quality and efficiency. Interior design consultants will continue to play an important role in this on-going evolution.

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