

THE INFLUENCE OF THE COLOR AND SHAPE OF THE OFFICE ON THE PRODUCTIVITY OF THE EMPLOYEES AND SUCCESS

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ABSTRACT: Buildings can have a profound influence on our health and our psychic and spiritual state of being, Harmony and balance, light and color, relationship to landscape, ecological sympathy, energy efficiency, geometric form and colors are contributing elements of shelter which aspire to be nurturing rather than draining. We resonate at both cellular and consciousness levels with our environment. By creating an environment around us that is supportive to both our inner and our outer senses, we can enhance rather than alienate our human links with nature. Architecture, when employed as a means of embodying principles of universal harmony can sustain us rather than drain us, so that our homes become our havens, and our work places support our creativity.

When architecture incorporates these symbols, they need only be implicit as a theme out of which the design evolves. The power within the symbols is vibrational, and the way they are used should optimally be compatible with the inhabitants. This is the role of the designer, to identify that compatibility. When vibrational symbols are used as a rigid format springing from the mind, their power is limited. The mind is a tool. Only when thought is coupled with intent arising from the heart, does manifestation occur.

Keywords: color combination, office design, productivity, success, geometrical shape, positive area, positive environment

INTRODUCTION:

“We shape our homes and then our homes shape us”

This quotation has a sense, because we are spending a part of our life indoor. The atmosphere in the house, office directly influence on our personality and mood, in general. Nowadays, we are living in the era of the new technologies and developments; there are numerous opportunities to create the environment in the house with exceptional vitality, which will provide health and the wellness. In this case, it is very important to structure the correct interior design and the furniture, which will lead to a good health of the user of a place. This could be achieved through the correct shapes and pleasant colors around.

The methodology included in this paper helps the interior designer to enhance the role of positive energy when designing and furnishing living spaces to achieve harmony between the human body as an energy field and the energy of space and place. This methodology is based on designing furniture with specific characteristics and is strategically placed in space to neutralize negative energy and add a positive quality to it by shapes, colors, figures.

The paper is divided into 5 section. In the beginning, we will talk about the influence of the color and analyze the main rules of the successful color combinations. In the second section, we will try to connect the certain color with the human emotions. In addition, in the third part, we will operate with the most popular colors and will make the connection between the color of the office space, environment on the success and positive atmosphere in the company. Moreover, we will try to reveal the secret of the Google success. Finally, in the fifth section, we will systemize the most common shapes that can be used in the office design.

1. The analyze of the color and it influence on the human emotions:

Color is an integral part of the world, and is inseparable of what people perceive around them. However, just because color exists all around the people does not mean that it cannot be controlled. Color humanizes the space, makes it welcoming and creates a sense of space, scale and meaning and it makes the space come alive. Color can be natural or artificial, permanent or transitory, used for effect or emotion. Human life is surrounded by color, shades and light. Each of them influences mood. Each color has a meaning and link to human mind. Color for personal requirements can be chosen according to the mood and can be changed them so often; but the color of the space cannot be changed so easily. Therefore, it is important to choose right color for the space [25].

Color design is based on the interaction of three items—form, light and color. Color studies at the Itten Bauhaus helped lay down a set of principles through the exercise of “educational workouts” and the pursuit of “sign, shape and color” as key design elements—where color is understood as an expressive medium to all the spatial vacuum left by abandoning painting as a “separate and imaginary expression” and using “fields of color” to express relations in buildings, because “without color these relations are not living and not actually visible.”

In the early twentieth century architectural chromatics took on a sophisticated conceptual meaning, which identifies and highlights the architectural and environmental features of a place. Any urban area, it was thought, has its own “color space” as well as its own morphological space thanks to various factors—light, materials, colors and contrasts, types of spaces, sizes of buildings, etc [29].

Table 1. Colors combinations and chromatic chords according to Johannes Itten

	WHITE	YELLOW	ORANGE	RED	GREEN	BLUE	PURPLE	BLACK
YELLOW	More dark and bright	1 : 1	Sunny and bright combination	Greenish yellow and more purple red	Yellow out	Quite strong combination	Strong combination	More cold and bright
ORANGE	More dark and bright	Sunny and bright combination	1 : 1	Cooler less contrast	Orange out	Strong contrast orange out	Strong contrast orange out	More light and bright
RED	More dark and bright	Greenish yellow and more purple red	Cooler less contrast	1 : 1	More movement	Red out	More bluish purple more orange red	More bright warmer
GREEN	More dark and bright	Yellow out	Orange out	More movement	1 : 1	Green out	More light green	More light and bright
BLUE	More dark and bright	Quite strong combination	Strong contrast more dark blue	More dark blue	More light blue	1 : 1	More dark blue	More light and bright
PURPLE	More dark and bright	Strong combination	Strong contrast orange out	More bluish purple more orange red	Contrast purple out	More light purple	1 : 1	More light and bright

Source: [29].

In The Art of Color Itten remarked on the role of color as a word, language and unique expression that may have value and meaning only in relation to other words and languages; the theory is that perceived colors are based on their interaction with other colors.

Table 2. Goethe’s harmonic scale. Harmonic ratios of primary and secondary colors.

	YELLOW	ORANGE	RED	GREEN	BLUE	PURPLE
YELLOW	1 : 1	3 : 4	3 : 6	3 : 6	3 : 8	3 : 9
ORANGE	4 : 3	1 : 1	4 : 6	4 : 6	4 : 8	4 : 9
RED	6 : 3	6 : 4	1 : 1	6 : 6	6 : 8	6 : 9
GREEN	6 : 3	6 : 4	6 : 6	1 : 1	6 : 8	6 : 9
BLUE	8 : 3	8 : 4	8 : 6	8 : 6	1 : 1	8 : 9
PURPLE	9 : 3	9 : 4	9 : 6	9 : 6	9 : 8	1 : 1

Source: [29].

The relationship between colors changes the final result by changing the perception of colors, and the right color design process encompasses the interaction only through comparison

or contrast and changing some basic parameters: the figure-ground relationship (proportion, shape, elements), the unity or fragmentation of color, and the position, intensity, brightness, opacity, etc. Goethe himself had suggested a way to achieve harmony between color combinations from a proportional scale of basic colors arranged by their brightness and referring to a physiological principle of balance that is also rejected in many philosophical interpretations [25, 23].

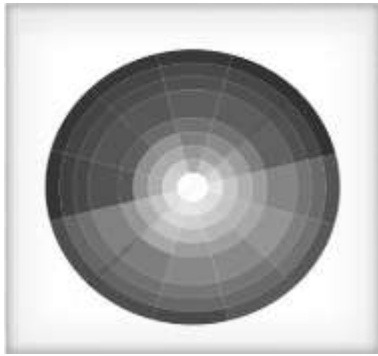


Figure 1: achromatic color scheme



Figure 2, 3: monochromatic color scheme of pink and green



Figure 4: analogous color scheme

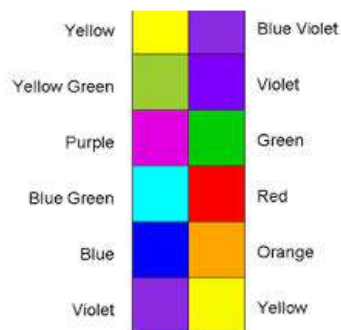


Figure 5: complementary color scheme; Sources: [31, 35].

Through the research at the Bauhaus Itten left us a clear description of the meaning of the possible combinations of color: a compositional structure based on “musical” chords of two or more colors, whose harmony can be defined using the color circle (or color sphere) and by matching colors with regular geometric shapes.

Itten also experienced the spatial effects of color, highlighting the most significant factors that create depth, that act as lines of force of the color field and that “manifest themselves in the form of light-dark, warm-cool, quality or quantity contrasts.” To this effect, the background color is as important as the color that is added, showing the interaction of the relativity of color value. As early as 1915 he was certain “that the spatial gradations of the three basic colors on a black background, correspond to the proportions of the golden section.” The analysis goes on “forever,” as Itten himself notes, analyzing chords and spatial effects one by one, but he could not suggest secure standards with which to achieve the spatial equilibrium of a chromatic composition.

Knowledge of color theory require some understanding of basic principles about color and perception, but most of the modern color theory surrounds the way that people think about it, and interacts with colors, from those used on their walls to the hues in a company logo. Color theory incorporates psychology, history, and criticism just as much as it does science[15, 25]. For interior design, color contrast may be used to create different impression

such as emphasizing contours with hue, value and saturation contrasts, or the contrast between walls and furnishings will make the furnishings more prominent [21]. Understanding what makes a combination of color pleasing and the other one unattractive can be difficult. Today, many designers reject rigid rules in favor of applying innovative works. However, awareness of traditional color harmonies can be useful in understanding why certain colors work together and why some of them do not [19].

There are four basic color harmonies or schemes, which are achromatic, monochromatic, analogous, and complementary. *Achromatic* schemes occur when only neutrals- white, gray, black and beige- are used. In *monochromatic* color scheme, only shades and tints of one color family are used in color plan; for example, pale green with pure green and dark green can be used together. Yet, in such an arrangement, designer should consider the risk of a monotonous atmosphere. *Analogous* or related harmonious combine a limited number of (no more than two or three) adjacent (colors next to each other) hues on the color wheel, such as the usage of red, yellow-red and yellow together. *Complementary* schemes are based on hues directly opposite to each other on the color wheel. These schemes introduce both warm and cool colors into the environments. The options are the combinations of red and green, orange and blue, or yellow and violet [9, 14]].

2. The practical implementation of color

The use of colors in interior spaces as the translation of abstract color schemes, theories and meanings into real materials, surfaces, experience and use in a space is a complex matter

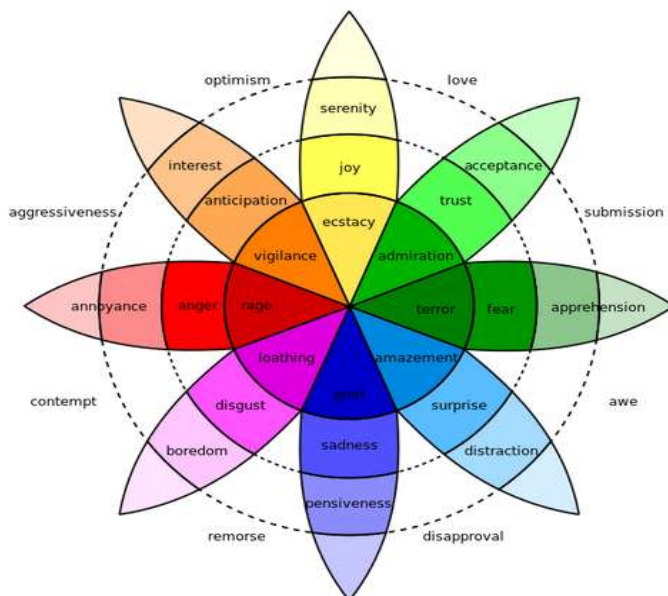


Figure 6: Wheel of Emotions; Source: [22, 23]

requiring creativity, judgment and often comes with experience. However, organized methodology and advance planning of colors can lead to successful use of colors. Pile [23] argues that just as one would not start construction of a building without construction drawings and plans, one should not start working on colors in interior spaces without careful planning. An understanding of the color theories and effects also supports confidence in use of color in practice. Various devised color schemes may not be directly applicable to actual color schemes in practice but it helps in understanding the way in which color appears to the viewers, its different

effects and provides a sound background for appropriate use of colors. An understanding of color psychology and symbolism play an important role while choosing colors for interior spaces in

different settings for different functions. In the figure 6, we have presented the emotional perception of the color by person [22, 23].

3. How to use the color scheme to create a positive Office Environments

Office design is defined as “the arrangement of workspace so that work can be performed in the most efficient way”. Office design incorporates both ergonomics and work flow, which examine the way in which work is performed in order to optimize layout. Office design is an important factor in job satisfaction. It affects the way in which employees work, and many organizations have implemented open-plan offices to encourage teamwork. Office design is very vital in employee satisfaction, and the broad concept of office design also includes the workflow. The work is analyzed initially and it is identified that how it is accomplished and then the overall setting of the office is made according to that flow. This ensures the smooth running of work in the office without hindrances [3].

Color is used in interior design for different purposes since it is a flexible and powerful design element that serves as a tool of communication between people and the built environment [8].

Color plays an important role for the variables of environmental design such as theme, ambiance, image, function, built form, location, and direction. Therefore, the correct use of color can reinforce users’ ability to interact with their environment properly. In addition, color as a design tool is relevant for presenting the aesthetical, symbolic or cultural meanings of environments by the appropriate usage of the color combinations [26].

It is evident that there are different criteria, and design objectives for different environments that require distinct ambiances and serve for varied functions. Hence, the color design of the spaces should be specified in accordance with the desired impression and function. Furthermore, colors can have strong influences on people’s moods, emotions and preferences. Thus, it is influential on the people’s perceptions and subjective impressions about their surrounding environment. [21].

For instance, red as an arousing, exciting and stimulating color with the associations of passion, strength, and activity, will seize all the attention and defuse all other hues. It creates dynamic interiors. On the other hand, blue with its relaxing, retiring, and cool effect, creates impressions of calmness, security, comfort, and contemplation. Moreover, it was stated that warm and luminous colors produce cheerful, high-spirited and expansive environments, but they may also create a centrifugal action that directs the attention outward, toward the environment. Conversely, cool and lower level of illuminance is accepted as producing centripetal action that encourages inward orientation and enhances the ability to concentrate [28, 15, 21].

At this part, we have gathered the most common colors that using in the office environment. In addition, we have analyzed the influence of each color on the productivity and efficiency of the workers.

Color, material and lighting choices for interior spaces may be different for residential use, retail outlets, restaurants, hotels, showrooms, offices, religious buildings, transport interchanges etc. depending on its location, climate, culture, activity and preferences.

RED:

- Ceiling: Intruding, disturbing, heavy
- Walls: Aggressive, advancing
- Floor: Conscious, alert, pompous

Red can also give energizing effect. However, over use of red can add complexity to space and hence should be carefully used [5].



Figure 7, 8, 9: The usage of the red color in the office design; Source: [31].

The red color represents the element of fire, which symbolizes life, joy and energy. When humans see the color red, their reactions become faster and more forceful. However, that boost of energy is likely to be short-lived and ultimately, red reduces analytical thinking. Therefore, we can assume that red color is a good choice for anyone making deals or selling, and for those who entertain clients in their offices [6].

YELLOW:

- Ceiling: Luminous
- Walls: Exiting to irritating
- Floor: Elevating, diverting



Figure 10, 11, 12: Cheerful and positive “yellow” for the designing of the working environment; Source: [31, 33].

Because of high visibility, yellow is used for safety indicators. It can give fresh feeling when used appropriately. A good color for canteen or part of rest room. Yellow when used in interiors can create a cheerful atmosphere; give a sleek look and can improve one's mood. Application of yellow as the dominant or key color can often unify and strengthen the overall interior space but if went wrong can seem redundant and hot [5].

According to the pictures, we can identify that this color stimulates clarity of thought, creativity, and mental activity; in general, it is excellent color for a home office. Yellow also promotes discipline and friendliness, which anyone working in a home office needs.

ORANGE:

- Ceiling: Stimulating, attention seeking.
- Walls: Warm luminous.
- Floor: Activating, motion-oriented.

Orange can be harsh if it is too bright. Appropriate use of bright orange can create lively and cheerful moods and can be used to highlight surfaces. Calmer tones of orange are easier to live with [6].



Figure 13, 14, 15: appropriate use of orange color for the working area; Source: [31, 32].

Orange and other warm, desert colors stimulate socialization and collaboration making it good for a small office using a team approach to management. This color is especially harmonious in an office used for creative writing or teamwork.

BLUE:

- Ceiling: Celestial, cool if light; heavy, oppressive if dark.
- Walls: Cool, distant if light; encouraging, deepening if dark.
- Floor: Feeling of effortless movement if light; substantial if dark.
- Blue can be cold and bleak if applied to large areas.



Figure 16, 17, 18: the beneficial usage of the blue color for the interview rooms; Source: [31, 32, 33].

This color suits offices where trust and calm are important, such as where interviews or sessions are held. Blue is the color of relaxation and peace, making it a great color for offices that are used for writing

The next color that we will analyze is **BROWN**:

- Ceiling: Oppressive and heavy if dark.
- Walls: Assuring if wood is used.
- Floor: Steady, stable.



Figure 19, 20, 21: the solid brown for the office design; Source: [31].

Brown works well as natural color for wood, mud etc. Brown paint is not as comfortable. This color can be timeless and classy as well as modern at the same time. Brown is used in many ways throughout interiors and fashion world. Brown lighter to darker tones, brown can be versatile and blend well with other hues [6, 10].

BLACK:

- Ceiling: Hollow to oppressive.
- Walls: Ominous, dungeon like.
- Floor: Odd, abstract.



Figure 22, 23, 24: the empowered black color for the main office; Source: [31, 32].

This color is a very traditional Feng Shui color for an office, because it represents money, power and success, especially when paired with metals, such as silver. If the owner of the company needs to feel empowered in your office and want to create energy to stimulate income, black is the way to go [2].

PURPLE color is a good choice as well, and this is the color that signifies ideals and truth. This is the color of choice for the thinkers and the philosophers, and the chosen color, too, for dreamers and writers [5].

- Ceiling: Delicate.

- Walls: Intimate, sweet, feminine.
- Floor: Too delicate, unfamiliar for the location.



Figure 25, 26, 27: the usage of the pink color to make a friendly environment; Source: [32, 33].

WHITE has a modern appeal. White can be used, for example, for the clean, sleek look of the interior space. However, too much of a monochromatic look can cause people to reflect on their own thoughts.

- Ceiling: Empty
- Walls: Neutral to empty, sterile, without energy
- Floor: Feeling of not to be walked upon.

In Feng Shui, white represents purity and confidence. Used with gold or silver, white creates a very calm atmosphere. This can be very beneficial to people that feel their office is a place to relax. However, it is recommended to paint the ceiling to a light color, because a dark color can cause the feeling as if there is a dark cloud hanging over the head while work. With the right office color, the possibility to make great deals increasing [13].



The color that we would like to pay our attention to is **GREEN**:

- Ceiling: Protective, disturbing if too bright or dark.
- Walls: Cool and calm if mild, can be irritating if dark.
- Floor: Soft, relaxing if softer tones are used.

Green works well as natural color for leaf etc. Green paint is not as comfort, if dark [6].

Figure 28, 29, 30: The working area in a white color; Source: [31, 32].

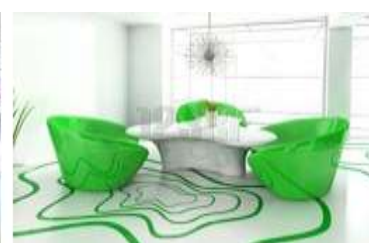


Figure 31, 32, 33: creative green working area; Source: [31].

A widely accepted assumption is that better workplace environment produces better results. Mostly the office is designed with due importance to the nature of job and the individuals that are going to work in that office. The performance of an employee is measured actually by the output that the individual produces and it is related to productivity. At corporate level, productivity is affected by many factors such as employees, technology and objectives of the organization. It is also dependent on the physical environment and its effect on health and employees' performance [16].

We can make a conclusion, that color specification of offices has also been considered with its psychological effects on workers, since people spend an increasing amount of time in their offices.

4. Google as an example of the success color implementation in the Office Interior Design:

The most well-known company that famous with the creativity and care about their employees is Google. They are trying to make the cheerful and positive environment for the workers; it is either for resting, or for working. The interior design of the offices stimulates people to the creative thinking, innovative ideas; and at the same time they are not bored by the daily routine, not annoyed by the working environment.

Google is one of the major USA corporations researching the power of color in the working world in everything. The company have found a clear link between color and satisfaction with a person's work area," which in turn can boost employee creativity and productivity. That is why so many companies are researching their color choices, which can lead to the tune of thousands of dollars [24].



Figure 34, 35, 36: The new Google office in London; Source: [30].

Natural light and fresh outdoor air similarly helps employees avoid fatigue, eyestrain and respiratory problems.

Color also has a role in worker happiness. Intensive colors like blue, green and purple are best for areas that require intense focus - conference rooms or the accounting wing, for example, while warm colors like yellow, orange and red enable creativity. The wrong colors can cause headaches, eyestrain and fatigue[6]. At this part, we will analyze the colors that have been used in the Google working areas.

Green is a color of growth and vitality, associated with new life and renewal. Psychologically it relates to balance and harmony of the mind, the body and the emotions. It assists in decision making by helping us to see all sides clearly. It encourages generosity, kindness and sympathy. Darker greens relate to money, wealth and prestige, while lighter greens relate to growth and freshness.

To begin with, yellow is a warm and happy color, which creates a sense of cheerfulness and playfulness. Psychologically, it is optimistic, uplifting and illuminating, brightening people's spirits. Yellow stimulates the logical side of the brain and mental clarity. It promotes wisdom and academic proficiency. It inspires original thinking and creative ideas. Physiologically, yellow stimulates the mind and mental activity. It increases the analytical processes and our logical reasoning, helping with decision-making.

Blue indicates confidence, reliability and responsibility. It relates to one-to-one communication rather than mass communication. It inspires wisdom and higher ideals but is also conservative and predictable. In addition, blue is calming, reducing tension and fear. It slows the pulse rate and reduces appetite. Being a creative color, it creates a sensation of space. Blue adds strength and unity, and is therapeutic to the mind and body. It brings harmony to the sword.

According to the design of the Google offices, the company became the most successful and famous. We are not able to prove that fact; however, this is the important part. Because the company consist from the employees – the success depends from the work of the employees. The workers are working well when they are feeling that they are happy, positive, not stressed.

Figure 37, 38, 39, 40, 41, 42, 43: The creative and impressive Google offices in Amsterdam, Zurich and Tel-Aviv; Source: [14, 30, 31].



5. The meaning of shapes in the Interior design of the working area:

In general, meaning, “proportion” is a relationship between the size, degree and shape; between the element of the object and the way it relates to the total physical form. Usually, there are three types of proportion which consist of “geometric”, “harmonic” and “arithmetic” [27].

In the interior design, the proportion is characteristic of a shape. Notably, the meaning of proportion of a shape does not only concentrate to the dimensions. Several issues effect to the proportion of room and the location in plan, for instance the position of function of the room and the way of furnishing of the room and choosing the accessories will shape the space [12].

Mostly for the designing of the office plan and shape the designers using the “geometric” shapes. We are going briefly to describe the meaning of the most common geometric shapes.

CIRCLE:

Circles protect, they endure, they restrict, they confine what’s within and keep things out and their completeness suggests the infinite, unity, and harmony. Their movement suggests energy and power. Because circles are less common in design they work well to attract attention, provide emphasis, and set things apart. They represent and suggest many things such as:

- community, integrity, and perfection
- the sun, the earth, the moon, the universe
- well-roundedness and completeness [20].

RECTANGLES:

Rectangles are the most common geometric shape encountered. The majority of text we read is set in rectangles or squares. Squares and rectangles are stable, they are generally not attention getters, but can be tilted to add an unexpected twist. Overall they are familiar and trusted shapes which represent and suggest things such as:

- order and formality
- mathematics and rationality
- conformity, security and solidity
- evenness, equality and peacefulness

[11].

Triangles

Triangles can direct movement based which way they point, they can be stable when sitting on their base or unstable when not. Triangles have energy and power and their stable/unstable dynamic can suggest either conflict or steady strength. They can be used to suggest:



Figure 44: The round conference room. The best way to achieve success.; Source: [31].



Figure 45: The office mostly furnished with rectangles. Applicable for the rational decision; Source: [34].

- progression, direction, and purpose
- pyramids, arrows and pennants
- self-discovery and revelation
- law, science, and religion
- dynamic tension, action, and aggression [20].

Spirals

Spirals are expressions of creativity. They are often found in the natural growth pattern of many organisms and suggest the process of growth and evolution. Double spirals can be used to symbolize opposing forces. They are cycles of time, life, and the seasons and are a common shape in religious and mystical symbolism. They can be used to suggest:

- fertility, birth, death, expansion, and transformation
- returning to the same point on a journey
- the release of energy and flexibility through transformation
- the projection of an intention (when clockwise)
- the fulfillment of an intention (when counter clockwise) [7].

We have reviewed that each shape has its own meaning. The company's office plays a big role in shaping its culture. Equipment and décor can influence productivity and mood, and the floor plan can facilitate the flow of energy and ideas.

When talking about office space, the debate on whether or not to go with an open floor plan is bound to come up. However, we suggest using the open offices, according to the example of "Facebook" open environment. As it maintains openness, encourages collaboration and communication. This scheme is more effective. There is no walls or cubicles in the office; instead, we have a large open room for the team, for example, of engineers and data scientists. This type of environment fosters teamwork and even boosts productivity in our company. Since all the departments in the office are always face-to-face with other team members, it allows maintaining the mutual collaboration between departments and achieving goals faster [1, 17].



Figure 46: The shape of the office in a form of triangle to achieve the more effective co-operation and persistent work; Source: [34].



Figure 47, 48: The creative usage of the spirals in the Google office in London. The aim: to provide the employees with the positive emotion and creative thoughts; Source: [30].

In addition, having an open floor plan means that no team member ever feels alienated or left behind. Everyone is on the same page at all times, thus reducing miscommunications or misunderstandings.

CONCLUSION:

The design of an office space directly affects the productivity and happiness of its employees. While many people are busy working all day, they may not have the time to notice just how their environment is affecting their work. To make the safe and pleasant environment in the office it is important, because people spend much more time at your company's office than at home.

The importance of a well-designed working environment cannot be overvalued. It can have a positive effect on a health, and can facilitate the achieving of new goals. According to the material that we have analyzed, the reasons for this are simple:

1. A well-designed office can boost productivity significantly, as it allows everything to be on the right place, and easy to find when needed, rather than it being hidden under mountains of paper and other mess. In addition, in the correct color scheme the energy levels can increase; also appropriate shape of the table, windows, space can create the positive environment, desire to work and success. The correct office design will mean that the overall office boost in productivity can be incredibly impressive.
2. Moreover, well-designed office space will impress any clients, which are aiming to make a deal on the meeting. At this point, we would recommend creating a meeting room that will be used for important client meetings, as well as a waiting area) for the clients to sit in. In this case, the best decision will be usage of the round furniture, without corners: to show to the guest that there are no barriers. The color of the furniture can be white or blue: to show the friendly atmosphere and calm down at the same time. In addition, some black elements in the décor will be preferable, as we have discussed above, this color helps to make a good deal.
3. The last, but not least: the personal feelings in the office. It sounds simple, but it is so important. One of the best things about working in a well-designed office is the fact that it makes the owner to feel great and, in turn, makes to look forward to coming into work each day.
4. Good design in any form has a habit of making us feel good in this manner, but the reason why it is even more prominent and positive in an office environment is due to Feng Shui.

In conclusion, chances are we spending much more time at your company's office than do at own home. The same with the employees, they will also spend a large chunk of their time at office. That it is why, important to find right space, time, possibilities and desire to arrange the interior environment.

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