



Article

The Role of Interior Design in Enhancing Happiness and Comfort at Educational Institutions in Saudi Arabia: A Case Study of Girls' College of Science and Arts in Mahayel Aseer, at King Khalid University

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Abstract: The aim of this research was to evaluate how the quality interior design aspects of the staff office spaces at the Girls' College of Science and Arts, King Khalid University, Saudi Arabia, affect their happiness, comfort and performance of their duties, and also proposes a solution based on the sciences of the relationship between happiness and interior design. The aim was achieved by carrying out a survey on staff of the college. The participants were selected using a combination of probabilistic and random sampling. The research found that a good number of staff at the college are not happy with their work environments. Further analysis indicated that interior design deficiency is a major cause of unhappiness of staff at the college. The results showed that this may be attributed to three important aspects of quality interior space furniture: insufficiency of furniture and other workspace items; lack of aesthetics, functionality, comfort, color and materials (low quality materials) of furniture and other workspace items; and a lack of sufficient natural lighting being another major issue affecting the quality of natural and artificial lighting in some offices at the college. Participants were also not comfortable with some materials used in the interior space. The study recommends that office spaces should be redesigned to meet the following interior design criteria: appropriateness for the workplace (size, lighting and materials); color and decorations (non-dark colors); and appropriate accessories and tools of work.

Keywords: interior design; happiness; comfort; theory of happiness; educational institutions



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1. Introduction

Happiness and comfort are natural human rights that everyone seeks to have. However, the quality of human life (which is directly influenced by a person's level of happiness and comfort) in educational institutions is significantly affected by the quality of study life (for the students) and/or working life (for the tutors and other workers) [1–3]. Therefore, it is important that quality of life in these institutions is enhanced otherwise the level of success by both the students and workers may be significantly hampered. This is the focus of the current research. The research aims to evaluate role of interior design quality in the quality of workers' work environment at Girls' College of Science and Arts, King Khalid University, Saudi Arabia.

According to Abouelela [4], there are two types of happiness that a person can experience, they are: experimental happiness and evaluative happiness. The author defines experimental happiness as the present psychological condition of feeling or having positive emotions such as love, joy, hope and enthusiasm. In this context, therefore, happiness means replacing negative feeling with positive feeling. Abouelela [4] further defines evaluative happiness as thinking of happiest moments in one's life. In other texts, happiness is defined as a state of experiencing frequent positive attitude, sense of comfort and satisfaction with life as a whole [5–7]. Therefore, in accordance with Ching and Binggeli [8] and

Jones [9], happiness is composed of positive attitude, satisfaction and comfort. Happiness is having a feeling or state of mind that entails satisfaction, comfort, joy, pleasure, and or contentment. Happiness is further defined as a state of pleasure in one's mind that has come as a result of achieving what one considers good or successful [3,10–12].

The feeling of happiness in learning institutions (both the students and the workers) is extremely important as people spend more of their active life (both childhood and adulthood) in learning institutions as students or as workers (for those whose careers are within the learning institutions) [3,11,13]. This means that work and schooling time take up more time than time spent on families, hobbies and friends combined. It is, therefore, important that happiness and comfort prevail in educational institutions [14,15]. Comfort and happiness in these institutions may enhance productivity, creativity, innovation, flexibility, quality, and customer satisfaction [16]. Additionally, they can reduce work and study related stress, and occupational diseases. Happy people can more readily solve the problems they encounter. This is because happiness enhances a positive attitude which is an essential characteristic in problem solving [5–7,17,18]. Happy individuals tend to treat people around them and problems they face positively and will always accept what they are facing, and these characteristics are essential in team building and problem solving [17,18]. Duari and Sia [19], Abu [20] and Abouelela [4] explained that job happiness is often reflected in the worker's daily activities by feeling calm, positive and comfortable with every activity assigned to them.

Şahin, Yenel [21] and Abouelela [4] describe a work environment as happy when staff have a positive feeling about the work they do and environment they work in. Abouelela [4] related work happiness amongst employees in learning institutions and their performance. The author stated that efficiency of administration at learning institutions such as universities, colleges and schools depend on the efficient staff and their ability to deliver on activities assigned to them. With this ability, their performance and success are often affected by their (employees') happiness and comfort at their work stations.

Previous studies have shown that happy people (especially employees) are 12% more productive and enjoy their work than dissatisfied individuals [4–6,17]. Studies also show that happy employees can stay four times longer in an organization than dissatisfied individuals [4,7,18]. Further according to Walsh, Boehm [7] and Oswald, Proto [17], happy staff tend to be associated with high performance in job-related activities than unhappy employees.

There are a number of ways through which happiness and comfort in the workplace can be enhanced. An example is optimum interior design. Research has shown that interior design of the space can affect people's feeling and perception about the space and thus affecting their productivity at the workplace [22–24]. For instance, a cramped and trapped interior space can affect the productivity and creativity. According to Bangwal and Tiwari [25] and Hoendervanger, De Been [26] interior design aspects such as color, lighting, materials, air and sound quality can affect health, happiness, wellness and comfort of the occupier of the interior space. A high-ceiling interior space can improve creativity, focus, enhance mood and air quality of the space. This means that the interior design of an education setting cannot only influence the students, but it can also influence the productivity of trainers and other staff using the interior space [27,28]. It is therefore important that interior design associated with educational institutions can inspire teachers, students and other staff.

Research has shown that meticulous interior design in an educational setting or other work environments (including other spaces) can have a positive effect on the users of the space [29–31]. This in turn improves overall mood inside the institution's environment. Such an interior design as explained by Alaqeel [32] and Bossaller, Oprean [33] is often achieved by incorporating social, aesthetic and economic aspects within a space. As such Caroline [31] state that the interior designers should create spaces that are safe, comfortable, functional and healthy. By doing so, Celadyn [34], Montiel, Mayoral [35] and Rodríguez-Ubinas [36] explain that interior designers appreciate the importance of quality of the work environment for the trainers and other staff and the learning environment for the learners.

Due to the above benefits of interior design, interior designers should create spaces whose design go beyond the technical requirements by putting emphasis on the provision of quality space experience [36–39]. As such, the authors state that this can be achieved by creating spaces that students and staff interact with, relish, and thrive in.

Rodríguez-Ubinas [36] and Ching and Binggeli [8] explained that interior design in educational institutions should consider the following elements: air quality, visual appeal, lighting, acoustics, ventilation, study friendly spaces, and thermal comfort. These are discussed below.

1.1. Air Quality

Tkachenko and Mileikovskiy [40], Alaithan [29] and Ching and Binggeli [8] state that because students, teachers and other staff spend a substantial amount of time in the indoors (in the classes for the students and teachers, and in the office for the teachers and other staff), the quality of indoor air can have a significant impact on their health. For instance, poor indoor air quality can cause a wide range of health problems such as shortness of breath, fatigue, cough, nose irritation, eye irritation, throat irritation, sinus congestion, and headache [30,32,41]. With these effects, the comfort and productivity of the learners, teachers and other staff will be significantly affected [8,40,42,43].

1.2. Student and Staff Friendly Interior Spaces

Abouelela [4], Ching and Binggeli [8] and Bandyopadhyay and George [30] explain that the quality of interior spaces such as visual appeal, lighting, acoustics, thermal comfort and ventilation are extremely important in the success of students in the learning institutions. As a result of this, Afacan [44] states that learning institutions should not only offer aesthetic appeal but also be ergonomically suitable for the students and the staff. In terms of visual appeal, Hamilton [45] explain that interior spaces such as classrooms and offices and other places of work should naturally attract staff and the students. Such a space creates a positive attitude which is very important for student success in their learning process or performance of teachers and other staff while performing their activities [44,46,47]. In terms of lighting, Hamilton [45] states that proper light of the interior spaces is essential as the learners and staff spend most their time indoors. Triatmaja [48] further explained that lighting of interior spaces helps to enhance the visual appeal. It is because of this reason that Hussein [46] explained that artificial and natural lighting should be effectively integrated. The author further stated that integration of the natural and artificial lighting in a learning institution enhances the quality of activities being carried out the spaces within the learning institutions. According to Afacan [44], the planning and design of the spaces in the learning institution (such as classrooms and offices), should take advantage of natural light. This is such that these spaces should reap the maximum benefit of the natural light to lower the cost of power in these spaces [14]. By doing this, the author stated that the sustainability of the spaces will be enhanced [14].

Other than lighting and visual appeal, another important aspect of interior spaces in learning institutions is acoustics. Montiel and Mayoral [35] explained that an efficient acoustic design in an institution is one that enhances good student-student communication, teacher-student communication, teacher-teacher communication, and communication among other staff members. Such a space will eliminate the need for the students and teachers to strain in order to be audible.

Ventilation is another important aspect of interior design that is important in educational institutions. Ventilation determines the quality of air in an interior space as it provides sufficient air supply, inhibits spread of respiratory diseases, and controls odor [31,36]. It is for this reason that interior spaces within educational institutions should be properly ventilated. Research has also shown that clean ventilated air within spaces improve people's alertness and health, thus enhancing their performance. It is for this reason that Afacan [44] explains that ventilation ducts and openings should oriented and placed in such a manner that natural flow of air inside the space is enhanced.

Thermal comfort is crucial element of interior design in educational institutions. The aim is to ensure that the thermal environment within the spaces in educational institutions are comfortable [31,36]. A comfortable thermal environment, according to Triatmaja [48], improves productivity and well-being of the occupant of the space. Important aspects of interior space thermal comfort are: ventilation, heating, air conditioning, and thermal barrier [31,36].

From the above literature, it is clear that interior design plays an important role in happiness, productivity, comfort and performance of both students and staff in educational institutions. However, the situation at Girls' College of Science and Arts, King Khalid University, Saudi Arabia is not well understood. Are the students and staff at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, really happy and comfortable with their learning environment (students) and working environment (staff)? What contribution has interior design of the spaces within the institution made towards the current performance of employees and students? How can interior design of spaces be used to enhance in happiness, productivity, comfort and performance of both students and staff at the institution? The research intends to apply two principles (theoretical principles) in attempting to improve happiness and comfort of students and staff at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, and other institutions around the world having similar interior design deficiencies. The principles are the science of happiness and the science of interior design. The principle of interior design defines that the elements of interior space that can improve quality of internal environment and how such an environment can enhance comfort and happiness at the educational institutions.

2. Materials and Methods

2.1. Method

The study aims to evaluate how the quality of interior design aspects of the staff office spaces at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, affect their happiness, comfort and performance of their duties at the workplace. The research also proposes solution to the identified issues based on sciences of the relationship between happiness and interior design. To achieve these objectives, a quantitative survey was carried on the staff of King Khalid University, Saudi Arabia (especially those in the Girls' College of Science and Arts). This involved recruiting 103 participants (n = 123) drawn from different departments of the Girls' College of Science and Arts. Both academic and non-academic staff were involved in the survey provided they had an office which from which they operated. The recruitment of the participants was carried out using a combination of probabilistic and random sampling. Probabilistic sampling involved selecting the number of participants depending on the size of each department (total number of staff in each department). A weight was then assigned each department depending on the number of staff (size of the department). This weight was then used to determine the number of participants from each department. This technique ensured bigger departments had largest number of participants. The participants from each department were then randomly selected to participate in the survey as long as they had offices and/or working in an interior space.

The survey was carried out through a questionnaire which was administered using: emails, social media platforms, and face to face survey. Face-to-face survey involved physical distribution of the questionnaires to the participants and giving the participants a few days to complete the surveys. A follow-up using telephone calls and emails was used to remind them to participate. Survey questions were also sent to participants via their emails and social media accounts. Reminders were also sent to these participants.

The questions within the survey questionnaire were structured and were designed to gather perceptions on the level of agreements with current state of effectiveness of interior design in enhancing happiness at King Khalid University, Saudi Arabia. The questionnaire consisted of 5 level Likert scale questions divided into main five parts depending on the theme being investigated. Each part had a set of questions and statements that the

respondent was required to indicate the level of agreement with. Level 1 represented strongly disagreeing with a statement and level 5 represented strongly agreeing with a statement.

It is important to note that before the commencement of the survey, ethical approval forms were obtained from the relevant authorities and distributed to the potential respondents before the date the interview. The consent forms (ethical approval forms) were distributed to the potential respondents (students and staff at Girls College of Arts at King Khalid University, Saudi Arabia) via email and other online platforms. Additionally, a pilot study entailing a few friends and students was carried out to ensure that survey questions are understood and will collect the intended information.

The data were then cleaned, decoded and values recorded in excel software. Outliers and other data inconsistencies were then removed. Outliers were the responses that did not answer the questions or the ones that deviated significantly from other responses. Such responses were not included in the analysis. The data was then subjected to various statistical analyses depending on theme being investigated. This involved the use of inferential statistics such as regression analysis. The data was also analyzed by determining ratios, proportions and percentages. The results are shown in the next section.

2.2. Data Quality Control, Validity and Reliability

In order to ensure that the survey data collected were valid and reliable a number of control measures were applied. One such measure is detection and elimination of flatline responses from the data. This involved detection and eliminations responses from participants who selected the same multiple choice for all the questions. Another measure involved checking the attention of the participants. Checking the attention of the participants is critical in ensuring quality of data collected. Only attentive participants are likely to provide honest answers. Attention checking was applied to eliminate responses from non-attentive participants. This involved asking the participant to choose a specific option from the provided multiple choices. Back validation was also applied to check if participants provided host answers. This involved asking the same question twice.

3. Results and Discussion

3.1. Influence of Workplace Interior Design on Employees' Performance

How workplace interior design affects the performance of the staff was examined by two factors at the workplace: belief in relationship between workplace happiness and workplace performance, and the relationship between happiness and interior design. These are represented by questions 2 and 6 of the first part of the questionnaire (Table 1). The results are shown in Table 1. The results of question 2 indicate that vast majority of the respondents (58% = 40% + 18%) believe that their happiness at the workplace affects their performance. A total of 19.2% (6.2% + 13%) of the respondents do not believe that interior design of the workplace interior spaces affect their performance.

The research data further show that a number of staff (54% = 32% + 22%) at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, believe that design of interior spaces within their work environment affect their happiness and hence their job performance. However, 16% (6% + 10%) of the respondents do not believe that interior design of the workplace interior spaces affects their happiness. A total of 30% of the respondents chose to be neutral. These results indicate that staff at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, believe that, indeed, interior design of and happiness at the workplace do affect their performance. Therefore, the performance of these employees can be enhanced by addressing interior design challenges they face. Addressing these challenges will in turn result into improving the corporate productivity of College.

Table 1. The current level of happiness of the staff at Girls’ College of Science and Arts, King Khalid University, Saudi Arabia.

S/No	The Current Level of Happiness of the Staff	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (3)	Strongly Agree (4)	Total Percentage
1	I am happy with or in my work environment	10%	26.50%	53%	6%	4%	100%
2	Feeling happy in the work environment helps to improve my productivity	6.20%	13%	23%	40%	18%	100%
3	Job happiness is taken seriously at our office	12.5%	18.50%	56%	5%	8%	100%
4	I know what interior design entails and what it means	3%	6%	13%	67%	11%	100%
5	Interior design of the work environment matters a lot to me	4.60%	8%	22%	46%	19%	100%
6	Interior design of the work environment affects my happiness while carrying out duties assigned to me	10%	6%	30%	32%	22%	100%
7	Interior design of some spaces do not meet my expectations	8%	7%	20%	49%	16%	100%
8	Poor interior design is the likely cause of my unhappiness with my work environment	6%	5%	40%	35%	14%	100%

These results are consistent with the results of a study that was carried out Abouelela [4] who found that happiness in the workplace is related with creativity, employee performance, positivity and problem solving. The results are also consistent with Oswald [17] whose study found a positive relationship between workplace happiness and productivity. Oswald [17] explained that productivity of employees in the workplace can be enhanced by improving their happiness. These studies also indicated happy employees are 12% more productive and enjoy their work than dissatisfied individuals.

3.2. Assessing the Level Happiness and Comfort with Space at King Khalid University

The level happiness and comfort of staff at Girls’ College of Science and Arts, King Khalid University, Saudi Arabia, was examined by three factors: happiness of the staff at the college (question 1); the relationship between poor interior design unhappiness (question 8); and how serious job happiness is taken at the College (by staff, administration and students, question. Question 3). The results are shown in Table 1 (question 3). The results show that a good number of staff at the Girls’ College of Science and Arts, King Khalid University, Saudi Arabia, are not happy with or at their work environments (Table 1, question 1). This is because 36.5% (10% + 26.5%) of the respondents do not believe that they are happy with or at the workplaces. Only 10% (6% + 4%) indicated that they are happy with their work environment. The results of analysis also show that Job happiness is not taken very seriously at the Girls’ College of Science and Arts, King Khalid University, Saudi Arabia.

In order to determine if this unhappiness is caused by interior design and not something else, regression analysis was carried out between variable 1 (I am happy with or in my work environment) as the objective function and Variable 8 (Poor interior design is the likely cause of my unhappiness with my work environment) as the independent variable. The results indicated that, indeed, interior design is a major cause of unhappiness of staff at Girls’ College of Science and Arts, King Khalid University, Saudi Arabia. The coefficient, *p*-value and *r*-squared values of this relationship were −2.43, 0.043 and 0.34,

respectively, indicating a statistically significant negative relationship. This result indicates that the current unhappiness problem felt by the staff, whereby majority of them feel unhappy, can be addressed by improving the interior design of the interior spaces of the staff work environment.

Previous studies have also related employee happiness and comfort at their workplaces. Şahin, Yenel [21] and Abouelela [4] positively related employee happiness and positive feeling about the work they do and environment they work in. Duari and Sia [19], Abu [20] and Abouelela [4] found that job happiness is reflected in the worker's daily activities by feeling calm, positive and comfortable with every activity assigned to them.

3.3. Quality of Interior Space Furniture and Items

The quality of interior space furniture and items for staff at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, was evaluated using the following: the size of the interior space; sufficiency of the furniture and other work items and accessories in the working space; the size of furniture and other work items and accessories in the working space; aesthetics and functionality of furniture and other work items and accessories in the working space; the comfort of furniture and other work items and accessories in the working space (evaluates the ergonomics of the workplace furniture); and operation and working of furniture and other workplace items and accessories. The results are shown in Table 2.

Table 2. Results of assessment of the quality of interior space furniture and items.

S/No	Quality of Interior Space Furniture and Items	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (3)	Strongly Agree (4)	Total Percentage
1	The interior space of my work environment is big enough for the type of work I am doing	10%	5%	20%	50%	15%	100%
2	Enough furniture and other workspace items and accessories are available in the work room	16%	24%	40%	10%	10%	100%
3	Furniture and other workspace items and accessories are of the right size and design	5%	12%	33%	30%	20%	100%
3	The office furniture and other office are aesthetically and functionally pleasing	12%	35%	27%	17%	9%	100%
4	The design of the available office furniture and other work items make me feel comfortable	18%	35%	30%	12%	5%	100%
5	The available furniture and other workspace items and accessories are in good working order	5%	15%	20%	33%	27%	100%

The results indicate that most office spaces in Girls' College of Science and Arts, King Khalid University, Saudi Arabia, lack three important aspects of quality interior space furniture and tools, they are: sufficiency of furniture and other workspace items and accessories; aesthetics and functionality of furniture and other workspace items and accessories; and comfort of furniture and other workspace items and accessories. The results show that 40% (16% + 24%) believe that their work environment does not have enough furniture and accessories important to carry out their daily activities. A total of 40% of the participants decided to remain neutral, while 20% (20% + 20%) did believe that

their work environment have enough furniture and accessories essential to carry out their tasks while at the workplace. This result indicates that a good number of interior spaces (especially workspaces such offices) at Girls' College of Science and Arts, King Khalid University do not have enough furniture as well as essential tools items (tools and items that are needed for the day-to-day work activities). The deficiency of this important interior design aspect hinders the happiness and performance of staff at Girls' College of Science and Arts, King Khalid University.

The results also show that 37% (12% + 35%) believe that furniture and other workplace items in their offices are not aesthetically pleasing. Only 26% (17% + 9%) believe that furniture and other workplace items in their offices meet their expectations in terms of functionality and aesthetics. A total of 27% of the participants decided to remain neutral. This result indicates aesthetics and functionality of furniture and other workplace items in a good number of interior spaces (offices) at Girls' College of Science and Arts, King Khalid University do not meet the expectations of the staff, therefore hindering their performance and happiness at their workplaces.

The results also indicate that at least 53% (18% + 35%) do not believe that furniture and other workplace items in their offices are comfortable. Only 17% (12% + 5%) believe that furniture and other workplace items in their offices are comfortable. The remaining 30% of the respondents decided to be neutral. This result indicates most offices at Girls' College of Science and Arts, King Khalid University do not have comfortable seats which may hinder their performance at the workplace.

Quality of furniture plays important role in happiness and performance of employees at the workplace. Therefore, a lack of quality furniture at the institution affects the employees' happiness and performance. These results are consistent with Mahmoud [11] who found that interior design elements such as furniture affect occupants' psychology and behavior including their happiness. The results are similar to the Kim [37] who explained that interior design attributes such as furniture occupants' positive emotions measured via bio-signals.

3.4. The Quality of Natural and Artificial Lighting at the Interior Spaces

The quality of natural and artificial Lighting at the interior spaces (especially offices) at Girls' College of Science and Arts, King Khalid University, Saudi Arabia was examined based 6 factors, they are: availability of natural source lighting in the offices or workplace; the sufficiency or adequateness of the natural light at the workplaces (interior spaces); the appropriateness of current lighting (artificial and natural) in the office interior spaces; the opaqueness of vertical partitions (walls) of the office; the privacy of the interior spaces (offices); preference to work in an open-plan office with eye contact with colleagues. The results of evaluating quality of natural and artificial lighting at the interior spaces (especially offices) at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, are shown in Table 3.

The research identified one of the major issues affecting the quality of natural and artificial lighting in some offices at Girls' College of Science and Arts, King Khalid University, Saudi Arabia. The issue is a lack of sufficient natural lighting. The results indicate that despite the fact that there are some natural lights in office spaces (supported by 50% (19% + 31%)), a significant number of respondents believe that the amount of natural light in their offices is still insufficient. This was supported by 57% (36% + 2%), as shown in question 2 in Table 3.

Table 3. Assessment of the quality of natural and artificial lighting at the interior spaces.

S/No	The Quality of Natural and Artificial Lighting at the Interior Spaces	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (3)	Strongly Agree (4)	Total Percentage
1	There is a source of natural lighting in my office or workplace	35%	6%	9%	19%	31%	100%
2	The natural light in my office is sufficient	36%	21%	11%	2%	32%	100%
3	The current lighting in the office is commensurate with the interior space	11%	7%	14%	32%	37%	100%
4	I prefer vertical partitions (walls) for the office to be solid (opaque)	11%	11%	9%	25%	46%	100%
5	My office interior design make me feel private	11%	7%	11%	23%	49%	100%
6	I prefer to working in an open-plan office with eye contact with colleagues	44%	16%	12%	16%	12%	100%

On the positive side, the results indicated that most of the offices at Girls' College of Science and Arts of King Khalid University enhance privacy of workers, and that is one of the most important things to them. In this regard, 72% (23% + 49%) of the participants believe that their offices make them feel private while undertaking their activities. Additionally, 71% (25% + 46%) indicated that they prefer opaque (solid) vertical partitions (walls) in their offices to enhance their privacy. A total of 60% (16% + 44%) do not like working in an open-plan office with eye contact with colleagues. It may, therefore, be said that privacy of offices at Girls' College of Science and Arts of King Khalid University has been enhanced by availability of many office spaces with private opaque (solid) vertical partitions (walls) as opposed to open-plan office space. It is therefore recommended that office spaces that are open (with eye contact amongst the employees) be modified by installing vertical opaque walls to enhance privacy.

The results also indicated that the current lighting system in the office spaces is commensurate with the interior space. This is supported by 69% (32 + 37%) of the respondents who believed that the current lighting in their office commensurate with the interior space. A total of 18% (11% + 7%) of the respondents did not believe that the current lighting in their office commensurate with the interior space.

Research has shown that the quality of lighting of an interior space is important in the performance of employees while carrying out their duties. Studies by Bangwal and Tiwari [25], Hoendervanger and De Been [26] interior design found that lighting of an interior space can affect health, happiness, wellness and comfort of the occupier of the interior space. Afacan [44] explained that since workers and learners at learning institutions spend most of their time indoors, the quality of light in interior spaces of buildings in these institutions should be sufficient. Afacan [44] further explained that planning and design of the spaces in the learning institution should take advantage of natural light in order to enhance sustainability of the institutions.

3.5. Evaluation of the Quality Interior Office Space Materials and Color

The quality of colors associated with office spaces at Girls' College of Science and Arts, King Khalid University, Saudi Arabia was evaluated using the following criteria: how color affects emotions of the occupant; the comfort of the occupant with the materials used in the interior design elements (such as floors, walls, ceiling) of my office space; the comfort and attitude of the occupant with colors interior design elements of my office or workspace; the effect of the interior design elements color on the occupant in feeling lethargic and lazy.

The results of this evaluation are shown in Table 4. These results indicate that major concern by the staff at Girls' College of Science and Arts, King Khalid University with regards to quality interior office space materials and color are: color of the office furniture, and the color distribution in office elements (wall, floor and color) which most participants believe makes them feel lethargic and lazy. From the results (Table 4), it is observed that color used in the furniture and other items in the office does raise the emotions of the occupant, making them feel disturbed and stressed. This is supported by 67% (25% + 42%) of the respondents who believe that color used of the office furniture and other items in the office does raise the emotions of the occupant making the feel disturbed and stressed. A total of 20% (11% + 9%) of the participants do not believe that color used of the office furniture and other items in the office may raise their emotions making the feel disturbed and stressed. The rest of the participants preferred to remain neutral with the effect of the office furniture color on their emotions.

Table 4. Assessment of the quality of interior space materials and colors.

S/No	Quality of Interior Space Materials and Colors	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (3)	Strongly Agree (4)	Total Percentage
1	Colors used in the furniture items raise my emotions (makes me feel a little bit disturbed)	42%	25%	14%	9%	11%	100%
2	I am comfortable with the materials used in the interior design elements (such as floors, walls, ceiling) of my office space	11%	14%	21%	37%	18%	100%
3	I am comfortable with and positive about the colors interior design elements (such as floors, walls, ceiling) of my office or workspace	16%	16%	16%	39%	14%	100%
4	The colors in office make me feel lethargic and lazy	39%	19%	37%	7%	14%	100%

It is also observed that 58% (39% + 19%) of the respondents believe that color distribution in office interior design elements such as walls, floor and ceiling at Girls' College of Science and Arts of King Khalid University make them feel lethargic and lazy. A total of 20% (11% + 9%) of the participants, on the other hand, do not believe in the same. The rest of the participants 37% preferred not to take sides (either believing or not believing that color distribution in office interior design elements make them feel lethargic and lazy).

Even though the research identified two major concerns with quality interior office space materials and color (occupiers not being comfortable with the color of the office furniture, and the color distribution in office elements (wall, floor and color), the staff tended to be comfortable with the materials used in the interior design elements (such as floors, walls, ceiling) of Girls' College of Science and Arts of King Khalid University office spaces. This is supported by 59% (3% + 18%) of the participants, who believed in the same, while 25% did not believe in the same. The rest of the participants 21% preferred to be neutral. This means that materials used in the walls, roofs, and ceiling of office spaces at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, are relatively high quality and hence there is a high acceptance by the occupiers of these spaces.

From the above results, it is obvious that interior design attributes such as material quality and color affects happiness of employees at Girls' College of Science and Arts, King Khalid University, Saudi Arabia. These results consistent with Mahmoud [11] Kim [37]. Mahmoud [11] explained that interior design elements such as furniture affect occupants'

psychology and behavior, and hence their happiness. Kim [37] who explained that interior design attributes such as furniture occupants' positive emotions. Such positive emotions or negative emotions can be portrayed by employees' happiness at the workplace.

4. Suggested Solutions and Recommendation

4.1. Recommendations

The aim of this research was to evaluate how interior design aspects of the staff office spaces at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, affect their happiness, comfort and performance of their duties at the workplace proposing solution based on sciences of the relationship between happiness and interior design. This involved evaluation of the: influence of workplace interior design on employees' performance from the point of view of staff of Girls' College of Science and Arts, King Khalid University, Saudi Arabia; the level happiness and comfort with space at King Khalid University; the quality of interior space furniture and items; the quality of natural and artificial lighting at the interior spaces; and the quality interior office space materials and color. The research found that most of the staff at the Girls' College of Science and Arts, King Khalid University, Saudi Arabia, do understand that workplace interior design may affect employees' performance. The study also has found that a good number of staff at the Girls' College of Science and Arts, King Khalid University, Saudi Arabia, are not happy with or at their work environments. It also found that interior design is one of the major causes of unhappiness of staff at the college. The results also showed that most office spaces in Girls' College of Science and Arts, King Khalid University, Saudi Arabia, lack three important aspects of quality interior space furniture and tools, they are: sufficiency of furniture and other workspace items and accessories; aesthetics and functionality of furniture and other workspace items and accessories; and comfort of furniture and other workspace items and accessories. The results of the study also identified lack of sufficient natural lighting as one of the major issues affecting the quality of natural and artificial lighting in some offices at Girls' College of Science and Arts, King Khalid University, Saudi Arabia. The study also identified two major concerns with quality interior office space materials and color (occupiers not being comfortable with the color of the office furniture, and the color distribution in office elements (wall, floor and color), the staff tended to be comfortable with the materials used in the interior design elements (such as floors, walls, ceiling) of Girls' College of Science and Arts of King Khalid University office spaces.

To address the above identified concerns, and hence enhance the happiness and comfort of staff at workplaces, the office spaces at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, should be redesigned to meet the following interior design criteria:

- **Appropriateness for the work:** The interior space should appropriate for the nature of work or activity to be carried it in the room. This should be in terms of its location, size, type of furniture, ventilation, the number of occupants, and many other components. An interior that is too small or too big for the type of work or number of occupants, does not have appropriate furniture, is not well lit for the type of work, and is poorly located (for instance in a noisy environment), is considered inappropriate for the intended work;
- **Adoption of designs that enhance natural lighting of interior space.** One of the major problems facing College's interior spaces is lack of sufficient natural light. To enhance natural light received by the spaces, it is recommended that designs that allow maximum light such as big windows should be adopted. It is, however, important to note that these windows should not face North-South direction as maximum radiation is found in that direction. The windows should be located on the East-West direction of the buildings where maximum shadow is experienced. This ensures that the large windows do not let in sun's radiation which may end up heating the spaces;
- **Color and decorations:** Another aspect of an interior space is the color and decorations for the various parts of the space (floor, ceilings and walls). The color and decoration

should be suitable for intended occupants of the room. Aspects such as color temperature and type enhance the comfort and happiness of the occupants of a space. It is recommended that dull and dark colors be avoided in educational institutions. Material used in the flooring should depend on the use and occupier of the space. For instance, a manager's office floor should be made of wooden floors or premium tiles and materials, and quality carpets. Such aspects help enhance the importance of the occupier in an organization. If the room is a classroom, then the floor should be made of a long-lasting material and material that is resistance to inks, paints and scratches and is difficult to break once installed. Such a material is ceramic tile. The color of such tiles should not be dull nor dark. They should be bright yet easy to clean. The color of walls should also be bright as dark ones affect the morale of the occupiers (employees) which in turn affect their performance at the workspace;

- Accessories and tools of work: An interior space should have all the accessories and tools the occupier needs to accomplish their work. For instance, if it's a classroom, it should have seats, projectors, white boards or projectors, power sockets and other important accessories. If the interior space is an office, it should have portfolios, office sets, artboards, office telephones, lampshades, vases curtains, desks, and other important office accessories.
- The sense of space: One of problems identified by participants is lack of connection between space and occupiers of the space. The participants felt that spaces are cramped and noncomfortable despite being big. The sense of space of an interior design especially at the learning institutions, according to Bangwal and Tiwari [25] and Hoendervanger, De Been [26], can be enhanced through high ceilings. These high ceilings make an interior space elegant, luxurious, fascinating and opens up the space giving it sense of belonging and welcoming. According to Bangwal and Tiwari [25] and Hoendervanger, De Been [26], these types of spaces improve creativity, focus, enhance mood and air quality of the space. In warmer climates such as Saudi Arabia, high ceilings also make interior spaces cooler, thus making them energy efficient. Additionally, the sense of space created by high ceiling makes occupiers never feel cramped or cooped as is the case of low ceiled spaces (especially if the room is small in size). Further as discussed by Bangwal and Tiwari [25], a high ceiling gives interior space versatility allowing for variety of interior décor ideas. For instance, one can go traditional with pendant lights, add beams to give space a rustic look, go modern or contemporary, install antique chandeliers to give the space a sense of old-world (traditional) feel. Therefore, it is recommended that new buildings within Girls' College of Science and Arts, King Khalid University especially those associated with large spaces such as common lecturer rooms, assembly halls, social halls, entertainment halls, and classes be equipped with high roof;
- Nature and biophilic design and view out: Another way through which interior spaces can be enhanced at the college is by embracing nature as biophilic design in interior spaces such as library and offices. Such a design is recommended to embrace large facades made of transparent materials and large windows. This will allow people feel part and parcel of nature as well as enhance space view out (the occupiers of space will be able to enjoy external views while undertaking their office work). Additionally, such facades should be designed in such a way that they enhance cooling of the interior spaces. Visible exterior space should have representation of Saudi Arabia's natural features and/or properly landscaped to enhance natural feeling of the interior space occupiers;
- Space management: Another way of enhancing interior space at the college is through space management. This involves managing an organization's space to so as to enhance its optimal use. This is often carried out by a professional in interior design. The importance of interior space management are as follows: first, it makes space more functional. For instance, boardrooms, furniture and cafeteria must be functional. Placing these facilities may affect the functionality of workplace and even make it

difficult to for employees to work effectively. Secondly, it makes interior space more comfortable [48]. Interior space comfort is measured based on two needs or criteria: psychological needs and physiological needs. The details about these needs are summarized in Table 5. Professional interior designers make spaces more comfortable by choosing the right future, walling materials, ceiling materials and other space fixtures. Therefore, it is recommended that whenever any new building is being put up at the college, the services of a professional interior design is sort after.

Table 5. The comfort criteria that interior space (office or classroom or any other space) needs to meet [4].

S/No	Psychological Needs	Physiological Needs
1.	Personal space	Indoor air quality
2.	Friendship	Acoustic comfort
3.	Telecommunications	Ergonomics
4.	Privacy	Thermal comfort
5.	Physical space	Optical comfort

It is important to note that the methods and recommendations of this research are also applicable to institutions around the world facing similar interior design problems and happiness related issues.

4.2. Limitations and Recommendations for Further Studies

The main limitation of this research is the sample location. Even though different departments were involved in the survey, the research was located at Girls' College of Science and Arts, King Khalid University, Saudi Arabia. This means that results of the study are specific to the institution and cannot be used to generalize the entire Saudi Arabia's education sector or industrial sector. It is, therefore, recommended that future studies may consider other institutions within the country. This will provide a true picture of the state country's education sector relation to happiness and interior design.

5. Conclusions

Interior design plays an important role in happiness, productivity, comfort and performance of staff in educational institutions. However, the situation at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, is not well understood. Are the staff at Girls' College of Science and Arts, King Khalid University, Saudi Arabia, really happy and comfortable with their learning environment (students) and working environment (staff)? What contribution has interior design of the spaces within the institution made towards the current performance of employees? How can interior design of spaces be used to enhance in happiness, productivity, comfort and performance of both staff at the institution? The results show that a good number of staff at the Girls' College of Science and Arts, King Khalid University, Saudi Arabia, are not happy with or at their work environments. Further analysis indicated that interior design is one of the major causes of unhappiness of staff at the college. The results also showed that most office spaces in Girls' College of Science and Arts, King Khalid University, Saudi Arabia, lack three important aspects of quality interior space furniture and tools, they are: sufficiency of furniture and other workspace items and accessories; aesthetics and functionality of furniture and other workspace items and accessories; and comfort of furniture and other workspace items and accessories. The study also found that also identified lack of sufficient natural lighting as one of the major issues affecting the quality of natural and artificial lighting in some offices at Girls' College of Science and Arts, King Khalid University, Saudi Arabia. The study also identified two major concerns with the quality interior office space materials and color (occupiers not being comfortable with the color of the office furniture, and the color distribution in office elements (wall, floor and color), the staff tended to be comfortable with the materials used

in the interior design elements (such as floors, walls, ceiling) of Girls' College of Science and Arts of King Khalid University office spaces.

The following recommendations are made to improve happiness through interior design at the college: extra furniture should be acquired to fill up the gap. The ergonomics of the existing furniture and other workplace equipment should be improved or new ones should be ergonomically compliant. The aesthetics of these equipment should also be improved. These office spaces should be redesigned to meet the following interior design criteria: appropriateness for the workplace (size, lighting and materials); color and decorations (non-dark colors; and appropriate accessories and tools of work (appropriate furniture).

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