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Encouraging Creativity in the Workplace Through the Physical Environment: Focusing of the Office Workstation

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ENCOURAGING CREATIVITY IN THE WORKPLACE THROUGH THE PHYSICAL ENVIRONMENT:

FOCUSING ON THE OFFICE WORKSTATION

By

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People can be creative anywhere but how can designers and organizations encourage this process to occur at an office workstation through the physical work environment? This four stage study investigated what Interior Designers, experts in a field that judges creativity, felt they needed to enhance their creativity while occupying a workstation in a commercial or home office.

An exploratory mixed method of social science qualitative and quantitative research was employed that applied methodological triangulation validating the data through cross verification of codes produced through the narrative process that were perceived to influence the creative phenomena in office workers. In stage one, 12 Interior Designers were asked to produce drawings of their workstations and write a narrative on how their workstations encouraged their creativity. This data was used to develop a survey that was completed by 213 Interior Designers across North America. One hundred and twenty-nine of these participants also completed the optional narrative at the end of the survey discussing how their workstations contributed to their creativity.

A list of the top thirty-five items from the physical office environment, that the participants perceived to encourage their creativity, was produced. Twelve themes

were also developed through the extraction of codes from the survey narratives and ranked in order of importance. The uniqueness of each participant was evident and many voices were heard through the narrative process used in this research project. This study has set the ground work for the development of an instrument of measure that can accurately determine the physical needs of an individual to maximize their creativity and allow for their successful integration into an organization's physical office environment.

This research adds to the evidence based design portfolio available to designers and organizational managers who are responsible for making design decisions that affect office workers at their workstations in the built environment; workers who produce creative ideas that can transform into innovative products and contribute to the health of an organization.

Dedication

Written with a view out the window
to my backyard horizon
that feed my creativity
compelling me to connect the dots
in the house that holds my family and pets that I treasure.
To my husband Robert who without his support I could not have accomplished my educational goals
and
to my children Gabrielle and Adam who gave me encouragement.

Acknowledgments

The author of this document wishes to express her gratitude to IDC and ASID and their members who participated in this study

and

Helen Pearce for coding the submissions in stage one.

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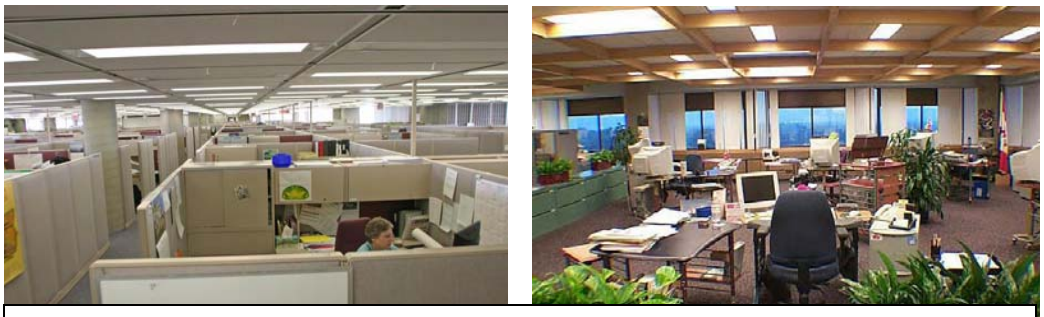
Chapter 1

Introduction

People can be creative anywhere, but how can designers and organizations encourage this process to occur at an office workstation through the physical work environment? Martens (2008) wrote that, "Creativity needs a horizon" (p.7). Figures 1.1 and 1.2 show typical open office workstations that can be found in many work environments. Did the users of these workstations feel that the design and location of these furniture systems supported their creative endeavors? Is one type better than the other? The workstations with no panels, shown in Figure 1.2, allow the occupants views to the interior and exterior horizons whereas the high panels in Figure 1.1 isolates the user of the cubicle from these views, but allows for some privacy. The research findings from the study of Studiolab (Marten, 2008) on the impact of the physical work environment on creativity supported the hypothesis that the workstation in Figure 1.2 would enhance the user's creative levels as the open concept allows for collaboration between office workers.



Figures 1.1 and 1.2 Typical Office Landscapes.
Traditional cubicle open-plan office (to left) and bull-pen-style open-plan office (to right) From "*Workstation design for organizational productivity"*, by K. Charles, A. Danforth, J. Veitch, C. Zwierzchowski, B. Johnson, and K. Pero (2004). National Research Council of Canada, Public Works & Government Services, Canada. Retrieved from http://www.nrccnrc.gc.ca/obj/irc/doc/pubs/nrcc47343/nrcc47343.pdf , pp. 54 & 55.

The study of Studiolab aimed to further conceptualize the creative potential of the physical work environment by identifying and exploring the various relationships between creativity, creative work processes, and the physical workplace (Gielen, 2006).

Studies of the human creative phenomenon that occurs in the workplace completed by researchers from various disciplines are reviewed in this document to connect the various perspectives. Research that supports human well-being is also examined as evidence indicates its contribution to productivity of office workers and their creativity. Employee creativity contributes to an organization's overall success and "understanding how the social psychological and physical environments work together to support creativity in the workplace is an important next step in evolving the knowledge base on organizational creativity; such knowledge would position architects, designers, and planners as strategic players in enhancing corporate competitiveness" (Vithaythawornwong, Danko, & Tobert, 2003).

The definition for creativity, as it applies to an organization, is very similar amongst researchers. Oldham and Cummings (1996) stated that, "When employees perform creatively, they suggest novel and useful products, ideas, or procedures that provide an organization with important raw material for subsequent development and possible implementation" (p. 607). Organizations are seeking to foster individual creativity and team work as it is an important source of innovation that is a necessity in the current market (Hirst, Knippenber g, & Zhou, 2009).

The purpose of this four stage study was to explore what conditions of the physical workplace the users of workstations perceived to enhance their creativity. The data collected in this study broadens the limited knowledge available to organizations

and designers on the affect the workstation and immediate surroundings, in the physical office, has on the occupant's creative abilities.

Creativity has been underscored as a key factor to organizational adaptability and competitiveness in today's rapidly changing business environment. Designing as well as managing work environments that facilitate creativity have therefore received growing attention resulting in a multitude of research examining the social-psychological work environment. "Few studies, however, have focused on the contribution of the physical work environment to supporting creativity in the workplace" (Vithaythawornwong, et al., 2003, p.1). To address this issue an exploratory mixed method research study was employed here that focused on workstations within the total office environment.

Chapter 2

Literature Review

Organizational Issues

Significance of the Question.

How can designers and organizations encourage the individual creative process to occur at the office workstation through the physical work environment?

Past studies of creativity have taken many directions but the focus has been on the individual judged to be creative or on the process to be inferred in creative production (Ellinger, 1966) as shown in Figure 2.1. This study took the approach that all individuals are creative and their creativity may be influenced by the physical environment and exposure to other individuals who share their space.

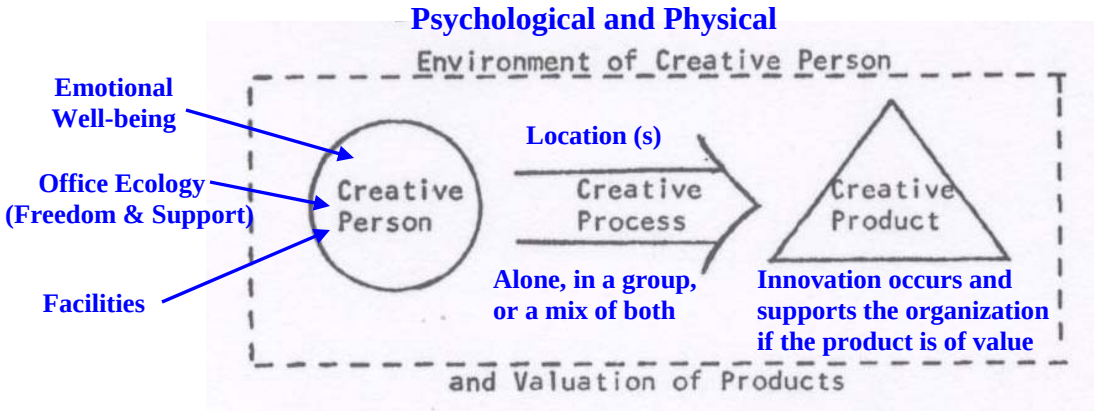


Figure 2.1 Relationships among the Elements of a Creative Person. Additions to the original diagram have been made in blue by the author of this paper to incorporate other applicable issues being discussed. Adapted from "The Genesis of Creativity", by B. Ellinger, 1966, *The Reading Teacher*, 19(7) p.493.

Recent studies that conceptualize the creative process have suggested the physical environment plays an important role in facilitating the development of

creativity that leads to innovative products (Amabile, 1988) “but little empirical attention has been given to the ways the physical environment affects an individual’s perceptions and experiences of creativity” (Stolols, Clitheroe, & Zmuidzinas, 2002). This study has produced data in this area.

The Individual and Positive Affect.

“Positive emotions serve as markers of flourishing, or optimal well-being.” (Fredrickson, 2001, p. 218). Frederickson (1998) formulated *the broaden-and build-theory* of positive emotions which supports the concept that a positive, happy person will have a greater ability to be creativity than a person that is negative. Findings from a study completed by Fredrickson (1998) of this theory provided an “initial empirical footing for the hypothesis that distinct types of positive emotions serve to broaden people’s momentary thought-actions repertoires” (Fredrickson, 2001, p. 221). Another study supported the broaden-and build-theory and showed “that happiness predicts creativity, and that the composite hope measure also predicts creativity via the mediating role of happiness” (Rego, Machado, Leal, & Cunha, 2009, p. 228). Therefore, the hypothesis is: if an office worker is happy while occupying their workstation then there creative level would be maximized.

“Creative activity appears to be an affectively charged event, one in which complex cognitive processes are shaped by, co-occur with, and shape emotional experience” (Amabile, Barsade, Mueller, & Staw, 2005, p. 367). Amabile, et al. (2005) completed a study using quantitative and qualitative research methods that collected data through daily questionnaires over several months from 222 individuals working on organizational projects that called for creativity. This study explored how affect, or

feelings, related to individual creativity in the office environment. Subjective assessments, used by contemporary organizational creativity researchers, were utilizied. The *Electronic Event Sampling Methodology* (Amabile, Whitney, Weinstock, & Fallang, 1997) was implemented for this study for the daily questionnaires. The *Consensual Assessment Technique* ,CAT, (Ambile, 1982), "the most commonly adopted approach involving subjective assessment, in which one or more experts or peers make scale-rated assessments of the creativity of individuals or their work" (Amabile, et al., 2005) was not feasible for this study due to the fact that the ratings were collected monthly and not daily. Therefore the research team created a new measure which they called the *Daily creative thought* consisting of coders' identifications of "spontaneously reported creative thought or problem solving in the daily narrative" (Amabile, et al., 2005, p.380). The results of this study also produced evidence that a worker's positive mood or affect was associated with higher levels of creativity.

A study with the objective to identify and analyze the individual attributes responsible for creative performance among employees of a Spanish firm, investigated the relationship of individual intrinsic motivation, expertise, and cognitive style with creativity and found that individual factors are clearly related to individual creativity (Muñoz-Doyague, González-Álvarez & Nieto, 2008). The researchers of this study concluded that the innovative cognitive style was most important with intrinsic motivation, second to positivity and significantly influencing the individual's creative levels (Muñoz-Doyague et al., 2008).

Social-Psychological Relationship to the Physical Environment.

Literature points out that creativity within an organization is highly influenced by the social work environments. In a study by Vithayathawornwong, et al. (2003) a modified operational framework diagram (see Figure 2.2) illustrates how creativity occurs in organizational settings.

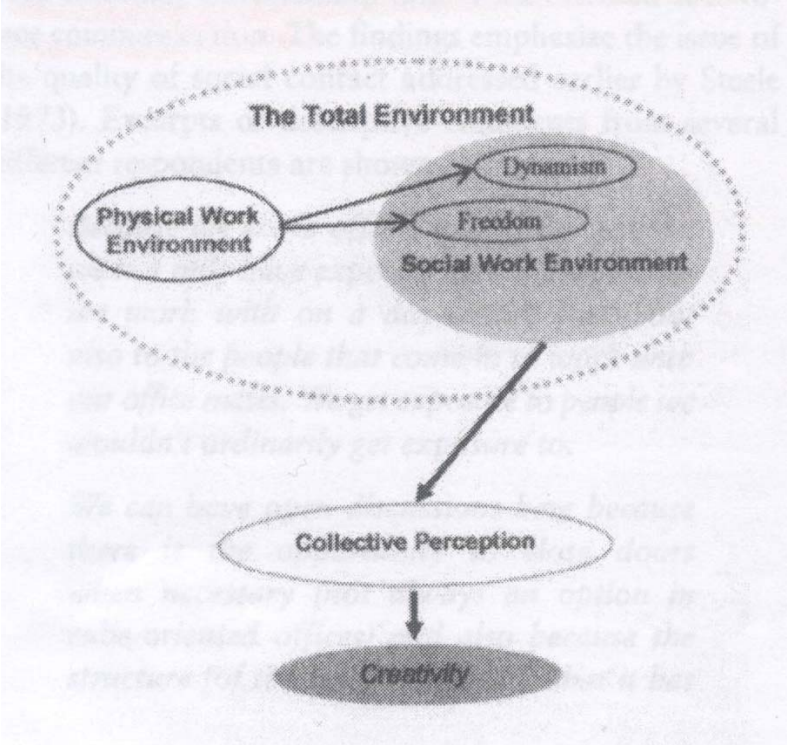


Figure 2.2 Operational Framework of an Office Environment as it Relates to Creativity.
From "The role of the physical environment in supporting organizational creativity" by S.Vithaythawornwong, S. Danko, and P.Tolbert, P., 2003, *Journal of Interior Design* 29(1&2) p.3.

In 2003, Vithayathawornwong's, et al. study presented two principle objectives through first exploring the perceived relationship between the social-psychological work environment and the physical work environment; the two dimensions of the total work environment that operate as a contextual factor to creativity in organizational

settings. Quantitative and qualitative data was collected by means of survey questions. The data from this study suggested that dynamism, the degree of energy and activity within an organization, is the most salient social-psychological condition conducive to creative behaviour supported by the physical work environment (Vithayathawornwong, et al., 2003).

Creative ideas can be generated through collaboration of a group of office workers but these seeds usually need a lot of nurturing to become innovative ideas or products that can be implemented or sold. Kornberger and Clegg's (2004) empirical study discussed the concept of office planning and cited research that indicated that encounters in the office that could lead to creative interactions usually took place in individual offices and not in multi-rooms, coffee shops, and meeting areas as planners intended.

In 2002, Stokols', et al. study examined the physical and social predictors of perceived support for creativity in the workplace and their affects on important personal and organizational outcomes. Ninety-seven employee participants completed a questionnaire to assess their perceptions of support for creativity, job satisfaction, personal stress, and physical and social features of the workplace during regular work hours. Recordings of employees' blood pressure and heart rate were also gathered during the work day. Surveys were also administered at three times to work groups under different office conditions. Objective measures were recorded by the research team. One of the results was that a "more social climate was associated with lower levels of personal stress" (Stokols, et al., 2002, p. 142). Another result showed an employee's greater perceived support for creativity by the organization at work is

associated with lower levels of personal stress and higher levels of job satisfaction. The researchers could not determine, with the data collected, if the links between environmental distraction, or social climate in the workplace were perceived to support creativity, but did find that "levels of distraction undermined perceived support for creativity at work" (Stokols, et al., 2002, p. 145). The investigator of this study has identified that more research is required to evaluate and compare the benefits of social interaction and individual isolation on the creative process and has accommodated this by including individuals that work at home into the sample group.

Health and Well-Being.

The key function of a workstation is to optimize the occupant's work performance. To do this a workstation should provide a supportive environment for mental and physical well-being. Research, in the healthcare field, has produced evidence that patient exposure to natural light and views of nature have shown to improve recovery rates and reduce pain in patients suffering from chronic pain (Ulrich, 1991). These findings may be found to encourage the creative process as well although no evidence could be found on this issue by the investigator completing this literature review. Exposure to the same beneficial physical properties, such as sunlight through the windows is already being considered, applied, and continuously promoted by the Leadership in Energy and Environmental Design (LEED, 2000) Green Building Rating System program in many office buildings.

Occupants with access to high quality views of nature may feel and actually be more creative. Kellert (1997) stated:

> Nature and living diversity function as an unrivaled context for engaging the human spirit for curiosity, imagination, and discovery, and therefore these views are desirable. We take pleasure in encountering and immersing ourselves in wild nature – particularly when it elicits feelings and rhythms seemingly timeless. Humans have always mined intellectual and emotional ores from nature's rich matrix of shapes and forms above all it's conspicuous and emotionally charged plants, animals, and landscapes. (p. 86)

Healthcare studies have shown that windows are beneficial to human well being. Pradinuk (2009) states, "The mounting research identifying the impact of daylighting – or its absence – on medical outcomes and patient well-being, and the more slowly gathering information that daylighting on other knowledge workers' productivity are sufficient to warrant an aggressive approach to setting daylight requirements for new healthcare projects." More study is required on the potential contribution of natural lighting and views of nature to human well being. The investigator of this research project found evidence, in the literature, to connect exposure to daylight to a person's perceived feeling of creativity.

The Physical Office Environment

Enhancing Creativity.

Some physical settings have been found to contribute to a productive office. Two linked studies, examining the potential role of interior design elements in fostering creativity, found that there are distinct elements of the physical environment perceived

to influence creativity performance (Mcoy & Evans, 2002). In study one of their research, sixty participants were recruited from a large undergraduate psychology class. The data analysis, from study one, identified physical elements of interior environments that the participants perceived to enhance creativity in the setting through spatial form, light, internal organization of objects, characteristics of bounding surfaces, color, texture, glass, and transparency. In this study windows scored high and although "natural views were preferred, even an obscured view contributed more to creativity potential than no view at all" (Mcoy & Evans, 2002, p. 419). Their second proceeding study questioned if settings perceived high in stimulating creative behaviour in the occupants were actually conducive to creative activities. Twenty precollege high school student participants where exposed to two settings, one perceived to be conducive to creativity, and one that was not by the criteria determined by the first study. All twenty participants produced a product in each setting to be judged on creativity. Study two provided "partial support for the hypothesis that settings perceived to affect creativity and may in fact, function as perceived" (Mcoy & Evans, 2002, p. 424) through the two method test process.

The Workstation.

Workstations occupy the majority of the floor space in offices. Office workers in North America spend several hours a day in offices; hours that should be productive. The government of Canada completed a study titled "Workstation Design for Organizational Productivity" (Charles, et al., 2004). In this document it stated that offices exist primarily to allow employees to do their work, and thereby support their organizations' goals. Their research indicated that employees spend upwards of 30% of

their waking hours per year in their offices and therefore there is a need for these workstations to be comfortable and satisfactory to the user. Organizations now make widespread use of open-plan offices, in preference to enclosed offices, to reduce space, costs, and increase furniture flexibility. A survey by the International Facility Management Association (IFMA) found that 61% of North American office workers have open-plan offices (Charles et al., 2004).

The government of Canada recognized creativity as a component of organizational productivity as related to the physical environment (see Figure 2.3).

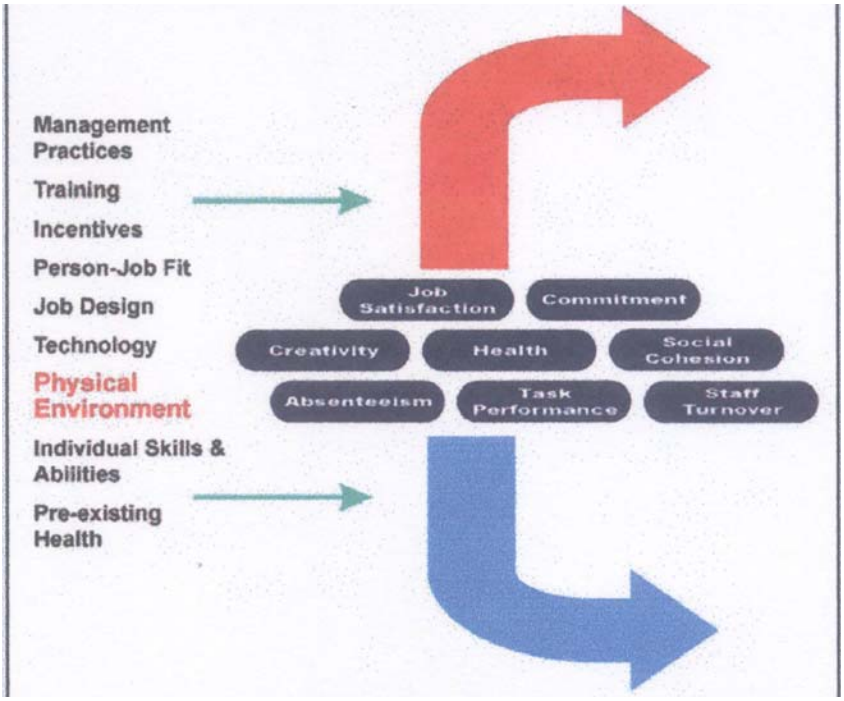


Figure 2.3 Breakdown of Employee Attitudes and Behaviours.
From "*Workstation design for organizational productivity*", by K. Charles, A. Danforth, J. Veitch, C. Zwierzchowski, B. Johnson, and K. Pero (2004). National Research Council of Canada, Public Works & Government Services, Canada. Retrieved from http://www.nrccnrc.gc.ca/obj/irc/doc/pubs/nrcc47343/nrcc47343.pdf , pp. 54 & 55.

Eight hundred office workers, in workstations across North America, participated in this Government survey (Charles et al., 2004). Participants ranked what they perceived to be the most importance physical office conditions that supported productivity (see Figure 2.4).

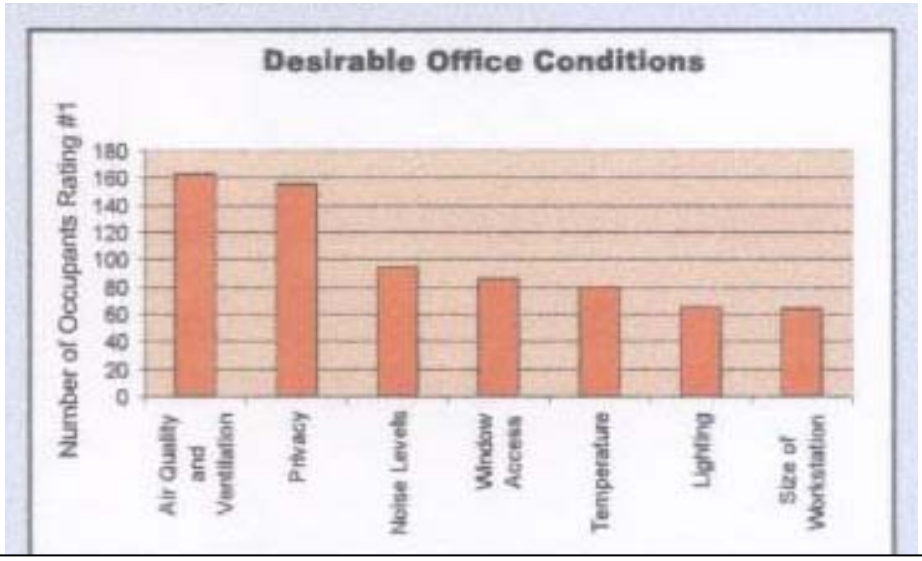


Figure 2.4 Office Conditions Ranked 'Most Important' of Seven Physical Conditions Presented to the Survey Participants.
From "*Workstation design for organizational productivity*", by K. Charles, A. Danforth, J. Veitch, C. Zwierzchowski, B. Johnson, and K. Pero (2004). National Research Council of Canada, Public Works & Government Services, Canada. Retrieved from http://www.nrccnrc.gc.ca/obj/irc/doc/pubs/nrcc47343/nrcc47343.pdf , pp. 54 & 55.

This Government of Canada survey did not explore the relationship of the workstation to an office worker's creativity but it did set the ground work for this investigation.

Office Trends.

Organizations and designers have been experimenting with the physical workplace to optimize employee productivity since the conception of the office during

the time of the Industrial Revolution. Variations of open and closed office systems have been employed over the years. The trend in new office workstations today is to create small but comfortable open workstations with low panels, for all office employees, to create a total collaborative workplace. This trend also supports access to window views for all employees. This type of open office concept is not new, but what is different is how the space previously occupied by upper management in their closed offices, many with windows, is being used; the window area is given to all employees that are now in workstations with low panels. Closed common areas, available to all office workers when they have a need for privacy, are placed in the center of the building; these new closed spaces may have glass walls to allow daylight to filter into the space.

Figures 2.5 & 2.6 Typical Advertisements for Office Workstations. Advertisements, by two different office furniture manufacturers, support the newest office trend, giving all office workers in an organization views to the exterior horizon (Canadian Facility Management & Design magazine, December 2010).

Manufacturers of office systems are producing new workstation designs to meet with this new demand from organizations hoping to increase employee productivity. Office systems manufacturers are promoting this newest office trend for workstations

that allow for unrestricted views to the windows by placing large window areas behind their products in their advertisements and showrooms (see Figures 2.5 and 2.6),

Organizations have been replacing designated private offices with open office workstations for years, but only recently have they been reducing the previously determined minimum workstation size. These smaller open workstations lower costs for the organization. How is this affecting employee creativity? Organizations are also encouraging workers to work outside the office and home offices were therefore included in this research. Innovations, produced by creative office workers, are needed for organizations to survive and prosper in the present economic climate. Employee satisfaction is now a serious concern for many organizations as they want to hold on to the best, brightest and most creative individuals in efforts to be very competitive in today's market. At the same time the office workstation with panel heights around six feet tall is still popular as it delivers visual privacy and overhead storage to the occupant. This workstation, with the high panels, also allows the user to personalize their space with minimal disturbance to other office workers around them. Organizations and designers are making choices on the types of workstations that will benefit office workers as well as reduce overhead costs. This study contributes to the limited body of knowledge on how the designated workstation in the physical office environment can contribute to an office worker's creativity.

Chapter 3

Research Methods

Research Goals - Acquiring Data of Value

The purpose of this study was to establish a list, in order of importance, of elements and properties of the workstation and its immediate surroundings that the people, working in these environments, perceived to encourage their creativity. The data collected to produce this list, in this four stage study, is reliable because of the sample group chosen. The participants selected were office workers who are creative on a daily basis and have expert knowledge of the creative process that allowed them to accurately evaluate their own creative levels in relationship to their exposure to physical environmental factors in accordance to CAT (Amabile, et al., 2005).

The investigator assumed that if the sample group for this study could assist in creating a list of physical items that encourage creativity in the workplace then the items on this list should be considered for integration into future office designs. Even more important, if the majority of the participants of this study perceived that items in the physical environment do encourage their creativity then the data collected is of value. Such results could also support future studies to determine the physical needs of people in various fields that require office work; people who need to be creativity to be successful and productive at their workstations.

The Research Design

An exploratory mixed methods design of social science qualitative and quantitative research was employed in this study that applied methodological

triangulation validating the data through cross verification of the phenomenon of creativity in people. The research emphasized qualitative data collected through the narrative process in stage one and later in stage four. This exploratory research design was used to first gather qualitative data to explore the phenomenon of creativity and then collect quantitative data to assist in the evaluation of the themes found in the narratives. “One advantage of this approach is that it allows the researcher to identify measures actually grounded in the data obtained from study participants”, (Creswell, 2008, p. 561). Features of the physical environment that the participants perceived to enhance their creativity were identified. Methodological triangulation, which is considered a separate mixed method design approach (Creswell 2008, p.557), was combined with the exploratory mixed method design as the quantitative and qualitative data collected separately was compared and interpreted by the investigator when the final stage of the research was completed. Figure 3.1 illustrates this combination of the two research method designs used by the researcher of this study.

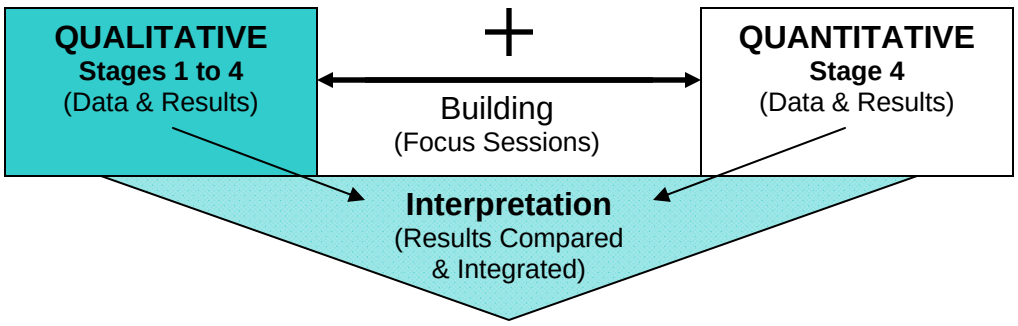


Figure 3.1 An Exploratory/Triangulated Mixed Methods Design.
Two original diagrams from Creswell combined and modified by the author of this paper. Darker colour shows concentration of study. Adapted from Creswell, John W, 2008, *Educational research: planning, conducting, and evaluating quantitative and qualitative research, by J.W. Creswell, 2008* Columbus, Ohio: Pearson Education Ltd., 2008:557.

Measuring the Creative Phenomenon in People

Scientific instruments cannot be used to record creative events so social science quantitative and qualitative research methods that rely on the perceptions of people were applied to this study. People are the source of data for many studies of creativity and "people are the best measure instrument; they are just hard to calibrate" (Newsham, 2006). Social science, qualitative and quantitative research methods are used to measure creativity and instruments of measures, such as the Consensual Assessment Technique (Ambile, 1982), that is used as the basis for this study, is reliable and has produced valid results. The use of CAT for this study is explained under "Criteria for Selection of Research Participants" that follows in this document.

The narrative process, a qualitative method used as a major instrument to collect data in this study, has been successful in examining mental models; a set of work related beliefs that the user has on any issue (Hardy, Gregory, & Ramjeet, 2009). Common themes arising from the narratives were organized and analyzed to assist with the understanding of the topic of enhancing creativity in the workplace through the physical environment in this study. Narratives have provided healthcare practitioners with the opportunity to engage in inclusive research that can have a transformational effect on all research informants, including the researchers (Hardy et al., 2009).

Design practitioners, such as Budd (2000) in his design firm called STUDIOS Architecture, are using narrative to complete research for their design projects to produce evidence based design. Budd endorsed the process when he wrote, "Narrative research will allow the designer and client to discover these tacit models and make

inferences as to the connection of beliefs, motives, and behaviors to the physical environment." Through the narrative process, the investigator of this research design developed themes on physical features that participants perceived to encourage their creative from data collected in stage four of this research project.

Research Preparation

Procedures for Contacting Participants.

A source for potential participants for all four stages of this research project was established prior to submitting the application for approval to complete research with human subjects to the American and Canadian ethic boards involved.

For stages one and two, a directory with names and email addresses of Interior Designers was made available to the researcher by the Association of Interior Designers of Canada (IDC) to be used to recruit participants. The investigator randomly selected 28 Interior Designers from the IDC directory that resided within a 200 kilometer radius of the College site that would be the location of the focus group in stage two. An invitation, via email, was sent out to these 28 Interior Designers to secure 12 participants for stage one and a few of these same individuals for stage two. After one week only 4 Interior Designers accepted the invitation to participate in stage one of the study and of these 4 Interior Designers, 3 agreed to participate in the focus group for stage two. The investigator expanded the search to the full province of Ontario and emailed another 32 Interior Designers for a total of 60 individuals contacted by email. Fourteen Interior Designers now showed interest in participating and requested the research instruction packages be sent out to them by mail for their review. One Interior Design Manager requested that 6 packages be hand delivered to her design firm for

consideration by her large design team. This manager, who is also an Interior Designer, had the opportunity to privately ask questions to the investigator before distributing the packages herself to her team. In the end 12 Interior Designers across Ontario participated in stage one and 2 of these Interior Designers, who lived close to the College, participated in the focus group for stage two. Stage two was then referred to as a focus session instead of a focus group as there were only 2 Interior Designers involved. One of the 3 Interior Designers who initially offered to participate in the focus group was unable to attend due to illness.

Stage three consisted of a pilot survey and focus group session to discuss the design of the survey, to be used in stage four, with the investigator. This survey was designed incorporating the information collected from the focus group in stage two. Four Interior Designers were asked to complete this pilot survey and participate in a focus group session to discuss the design of the survey; one Interior Designer had participated in stages one and two and the other three were not involved in the previous research stages. It was important to have participants in this focus group who had no former knowledge of the study to test the survey. It was also valuable to have one participant that understood the research development by previously participating in stages one and two. All four of these Interior Designers had easy access to the focus group meeting as they lived close to the College where the meeting took place. One of the four Interior Designers who had completed the pilot survey was unable to attend the focus group session due to her work schedule.

To prepare for stage four, the researcher approached the American Society of Interior Designers (ASID) and the Interior Designers of Canada (IDC) for their

assistance with contacting potential participants for the final survey of the research project. The researcher hoped to secure 200 Interior Designer volunteers across North America to complete the survey. ASID and IDC agreed to direct the invitations to participate in the survey to their members through their email networks. The invitations were sent out to all 12,000 ASID members by email and a reminder was sent out one week later, again through email. IDC initially sent out the invitation, from the researcher, by email to their Ontario members to facilitate the investigator's research schedule. No reminder was sent out, but later this same invitation was posted in IDC's monthly newsletter which would potentially reach all the provinces and territories in Canada, including Ontario, through email. In total, 259 ASID and IDC members started the survey in stage four. In the end, 213 individuals completed the survey, giving an 82.2 percent completion rate; 129 of these participants also completed the narrative at the end of the survey.

Ethic Board Approvals to Complete Research.

The investigator of this research was required to obtain approval to complete research with human subjects through the Canadian and American governing bodies.

The investigator received the *Certificate of Completion of the TRI-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: Core)* endorsed by the Social Sciences and Humanities Research Council of Canada and then *Fanshawe College Research Ethics Review Board Approval Notification of Proposed Research Involving Staff/Students and/or Facilities at Fanshawe College, London, Ontario, Canada.*

The investigator also received the *CITI Collaborative Institutional Training Initiative (CITI) Completion Report* for the CITI RCR Course for Students and Investigators in the Social & Behavioral Sciences for the University of Nebraska-Lincoln. Approval from University of Nebraska-Lincoln Institutional Review Board (IRB) followed for the investigator and her assistant, Helen Pearce, to conduct social research. The assistant played a minimal but important role in stage one of this research project.

Criteria for Selection of Research Participants.

The sample group for this study was selected because the nature of their profession requires them to be creative on a daily basis. Secondly, Interior Designers are experts in a field that judges creativity. Therefore, Interior Designers are capable of producing reliable and valuable scale-rated assessment of their creativity in relationship to exposure to a product such as a workstation and the surrounding physical environment as identified by the CAT method of measure (Ambile, 1982).

Interior Designers are also unique because their professional designation provides opportunities for them to be exposed to the newest trends and the most innovative products in office design and other areas of specialization. Lastly, a high percentage of Interior Designers have designed or at least have been consulted on the design of the workstation they occupy or have occupied and it is logically assumed, by this investigator, that these Interior Designers would supply themselves with a physical environment that would encourage their creativity to ensure their success in their design field. The participants in this study are creative people that pursue innovative design solutions for their clients.

This study produced information of value because many of the participants were exposed to variables of the physical environment that encourage creativity in their workplace. Each participant judged their own workstation(s) they have used. This four stage research design produced valuable qualitative and quantitative data.

Stage One – Qualitative Research Method

In stage one, participants were asked to produce drawings of their workstations and write a narrative on how this space encourages their creativity.

Eighteen instruction packages were sent out to Interior Designers requesting the package after receiving the invitation to participate by email. In this package there was a consent form, instructions on how to complete the project, a sheet of ¼" grid paper, a black felt pen, 4 sheets of 8 ½" x 11" vellum, and a stamped addressed envelope to return their completed submission to the investigator's assistant, Helen Pearce, at Fanshawe College. The package recipients were under no obligation to complete the exercise requested by the researcher. The participants were informed, on the consent form, included in the package, that the estimated time to complete this exercise was one to two hours. Twelve Interior Designers, across Ontario, returned the completed exercise by mail to the research assistant and all 12 submissions were accepted as they were proficiently completed.

Narrative and Freehand Drawings - Instruction Package.

Each participant, in stage one, was asked to use the materials supplied in the package for consistency and to reduce the chance that they would be personally identified by the investigator or other participants in stage two, focus session. The three page instruction document gave clear explanation of what was to be completed by

the participants. Page one included a brief introduction of the total research project, a definition for creativity, a statement on the significance of the study, and a picture of what the investigator saw when sitting at her workstation (see Figure 3.2).

Figure 3.2 View Seen When Sitting at My Workstation.
Photo included in the instruction package sent to participants in Stage One of this research project. Photographed by the author of this thesis document (2011).

Page two of the instruction package discussed the narrative process. Each participant was instructed to write a story about how their creativity is affected by their workstation, or other variation of a place they sit and work at for the majority of the day. They were allowed to write this narrative about a typical day, a unique event, or just analyze the physical environment where they do work. The length of this narrative was at their discretion. This narrative process produced data on the participant's perceived feelings about their reaction to their physical workplace related to their

creativity. The participants were asked to use 12 pt Arial fonts for their narrative, again for consistency and to protect their identity.

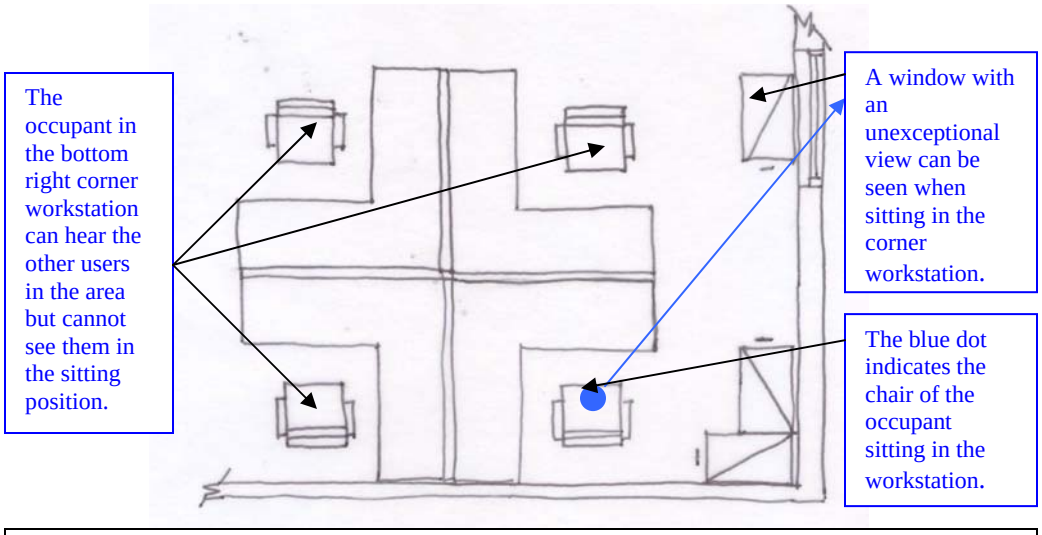
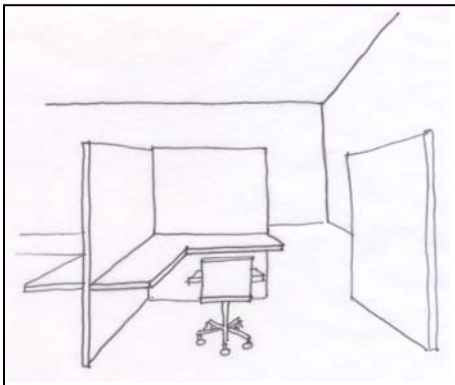
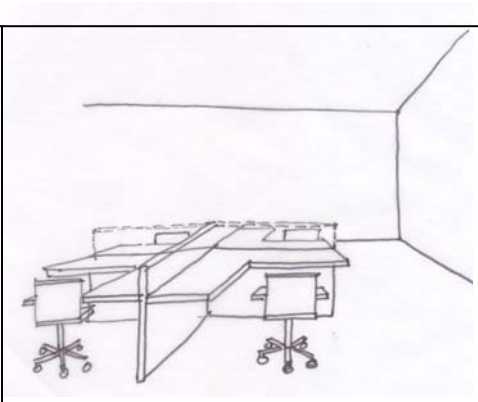


Figure 3.3 Annotated Furniture and Fixture Plan.
This drawing shows the workstation in Figure 3.2 in plan view as well as the other workstations in close proximity. Drawing by the author of this thesis document (2011).



B. An open workstation with very low partitions (less than 4 feet from the floor) that allows a view to the rest of the office and other occupants on the floor.



A. An open workstation that has limited view to the rest of the office due to panel heights and locations.

Figure 3.4 A Simple Perspective.
This drawing shows 2 variations of the workstations shown in Figure 3.3 in plan view as well as the other workstations in close proximity. Drawing by the author of this thesis document (2011).

The procedures for completing the 3 required drawings that were to assist with the analysis of the narrative followed. An example of each drawing was also included (see Figures 3.3 and 3.4). All drawings were to be annotated as shown.

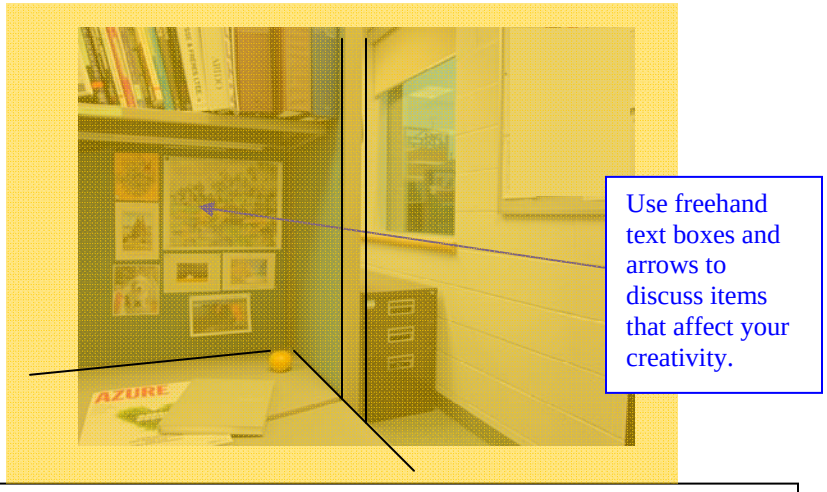


Figure 3.5 A Detailed Perspective of the View While Seated. Tracing paper over a photo with the drawing started with the black felt pen supplied. Drawing by the author of this thesis document (2011).

For the third drawing, it was suggested that the participant take a photo of the view they saw while sitting at the workstation; place a piece of the vellum (tracing paper) supplied over the photo and draw the picture with the black felt pen, also supplied, and add notes to emphasize important features (see Figure 3.5). The tracing process was employed to allow the participant to eliminate some details and emphasize what the participant had expressed in the narrative and to increase clarity for the stage two participants and the investigator.

The participants were instructed to seal the narrative, the 3 drawings and the signed consent form for stage one and the optional focus group session for stage two in the stamped pre-addressed envelop to Helen Pearce, the research assistant, by the deadline noted. These packages were sent out 21 days prior to the submission deadline.

An extension was given for submissions and announced by email from the investigator because one of the packages going to a participant did not reach its destination and a second one needed to be mailed. It was made clear that stage two was optional and that participation in stage one only was possible. The date for the focus session was tentatively set in the initial package and had to be changed as well with the input of the two participants of stage two.

Twelve submissions reached the research assistant's office by the revised deadline and were opened the next week by the research assistant. The research assistant coded all the narratives and drawings giving each participant a number, such as ID1, Interior Designer one. The research assistant then gave the list of names and consent forms to the researcher to accommodate the scheduling of the focus session for stage two with the participants. These documents were placed in a locked cabinet in the researcher's workstation at Fanshawe College. Some participants had put their names on their work and a couple individuals sent pictures with identifiable features therefore the research assistant covered these items with white-out before giving the completed work to the investigator. The data collected remained in a locked cabinet and was not opened until the stage two, focus session which took place approximately a week after the deadline of the submissions.

Stage Two – Qualitative Research Method

Participants of stage one were invited to attend the focus group in stage two at a Fanshawe College to review the submitted narratives and freehand drawings to pull codes (phrases) from the narratives to develop themes on the physical environment that users of a workstation, in stage one, perceived to enhance their creativity.

The focus group took place in a secure, private, conference room on the third floor of M building at Fanshawe College. It was made clear to the participants of the focus group, in the consent form they have previously signed, that anonymity was not possible during a group discussion that is face-to-face with other group members. However, during the focus session meeting and the narrative reviews, where themes were extracted, each participant was offered the option to identify themselves by their first name or pseudonym of their choice. They were told that there was an extremely good chance that some of the participants would recognize other participants because they were members of the same Interior Design organization of IDC. In the end only two of the three Interior Designers that signed the consent form for stage two participated and they both recognized each other and were comfortable with this. As previously mentioned, since there were only two participants the focus group was now referred to as the focus session.

The investigator moved the original coded narratives and freehand drawings from her locked filing cabinet to the conference room where the narratives and sketches were to be reviewed by the participants. The number of narratives and freehand sketches were counted before and after the focus group to ensure that none of these items were misplaced, lost, or stolen. The investigator and the participants in the focus group were only able to identify the Interior Designer who produced each narrative and corresponding sketches by the designated code. The two participants in this focus session may have chosen to identify their work to each other during the meeting. Participants were not photographed or video taped and their conversations were not recorded at this meeting. The participants were informed that all conversations and

work seen and produced during the focus session was confidential outside the conference room used for the meeting.

The investigator started the focus session by showing the participants an example of a short narrative she wrote titled “The Best Vacations” and demonstrated how to pull themes out of the short story. Coloured highlighter pens, coloured sticky notes, and black felt markers were supplied to the participants to complete their task of extracting codes and developing themes from the narratives produced in stage one by the 12 Interior Designers. The two focus session participants were instructed to put a sticky note, with the exact phrase extracted from the narrative on an 11” x 17” paper that was previously taped to a whiteboard by the investigator. A table and two chairs were set up right in front of the white board for easy access by the participants. Each theme had a designated colour. The participants were instructed to highlight the phrases in the narrative before transferring them to the sticky note. The investigator had previously numbered each line of each narrative so that the location of each phrase extracted could be located easily as follows:

1. Each narrative and set of drawings was given a designated letter
2. Each sentence in the narrative was given a number
3. Each phrase extracted was highlighted

Each sticky note used would had a reference code such as “A12” which indicated the phrase on the sticky note was from line 12 of the narrative authored by Interior Designer “A”. This technique supported later cross referencing by the investigator.

Figure 3.6 Whiteboard with Organization of Themes Pulled from the Narratives.
Photo taken at the end of the focus session in stage two by the author of this thesis document (2011).

The investigator acted as a facilitator of the meeting only and sat in the corner of the conference room allowing the 2 participants the freedom to develop the themes without interference. The process took 3 hours and at the end the investigator took a picture, shown in Figure 3.6, of the white board with the postings. The photo was used to verify that the notes with phrases have been filed correctly for later analysis and used as an illustration in this document. The 11" x 17" papers with the sticky notes attached were removed from the whiteboard by the investigator and placed in a portfolio under the supervision of the participants. The portfolio was placed in a locked file in the investigator's home office for later review. A copy was made of all the data and placed in a locked filing cabinet in the investigator's workstation at the College where the focus group took place.

The information pulled from stage one submissions by the participants in stage two had a major influence on the design of the survey tested in stage three and sent out across North America in stage four of the study. The focus session outcomes were discussed later in this document under “Results Analysis”.

Stage Three – Qualitative and Quantitative Research Methods

Stage three is a continuation of the exploratory mixed method of social science qualitative and quantitative research employed in this study that applied methodological triangulation validating the data through cross verification of the phenomenon of creativity in people. A survey design was required to produce data to achieve this verification. A pilot survey was designed utilizing the information collected from stage one and two and tested by a small sample group of 4 Interior Designers. One Interior Designer had participated in stages one and two bringing continuity and stability to the survey design used in stage four. One Interior Designer could not attend the focus group due to her work schedule. The other two Interior Designers offered a fresh perspective on the material in the pilot survey which strengthened the clarity of the final survey for the user. All four participants completed the online survey that was facilitated through “Survey Monkey” and three reported their reactions to the design of the survey in a focus group with the researcher. Survey Monkey is a web survey company located in the U.S.A. All responses to the survey are stored and accessed in the U.S.A. This company is subject to U.S. laws; in particular the U.S. Patriot Act, that allows authorities access to recodes of Internet service providers. The security and privacy policy for Survey Monkey can be reviewed at http://www.surveymonkey.com/.

The participants of the pilot survey were asked to write notes on their reaction to the questions as they proceeded through the survey. Participants were informed that the survey would require approximately 15 minutes for the short answers, 20 minutes for the optional narrative component depending on the detail included in their responses, and an additional 20 minutes to write notes to give feedback to the investigator.

The focus group took place in a secure, private conference room on the third floor of M building at Fanshawe College. All the participants knew each other so anonymity was not possible during this face-to-face focus group activity but all participants were comfortable with this.

The group made suggestions to improve the comprehension of the instructions on completing the survey questions. No questions were changed, added or deleted upon the recommendation of the focus group members. The full recommendations received by the members of this focus group and their overall reaction to the survey were discussed later in this document under “Results Analysis”.

Stage Four – Qualitative and Quantitative Research Methods

The revised online survey was distributed to Interior Designers, the selected sample group, across North America through the email networks of the Interior Designers of Canada and the American Society of Interior Designers.

The survey design was divided into 6 parts and it was determined from the pilot survey that parts 1 through 5 would take 20 minutes and part 6, the narrative would take on average of 20 minutes. Part 6, the narrative was optional to ensure a higher completion percentage for individuals starting the survey. The participants were not

informed that they could skip any questions but would notice this as they progressed through the survey if they attempted to do so. The investigator gave the participants freedom to miss questions to encourage them to finish the survey and also respect their decisions to skip a question for any reason. In some cases there may not have been an appropriate answer for them and forcing them to answer a question would cloud the results.

Under the research title on the first page of the survey the participants where informed of the 6 parts of the survey and that part 6 was optional. They were also given the estimated time required to complete the survey and the definitions for a workstation and the term creativity. The definitions were placed here to ensure that each participant would answer the questions from the same perspective ensuring the consistency of the data produced (see Appendix A, survey introduction).

Part 1, with 5 questions, was used to collect information on the workstations that the participants currently occupied (see Appendix B, survey part 1). This data could be used later to cross reference answers in the survey. For example, the relationship between an open workstation with low or no panels and the overall rated experience participants had with the amount of privacy they have while sitting at their present workstation; a question that was asked in part 5.

Part 2 had 37 questions, 36 of which were developed from the information collected in stages one and two of the research and styled in a modified 5 point likert scale format (see definitions). The ranking options included, very positive, positive, neutral, negative and very negative (see Appendix C, survey part 2). The participants were requested to pull from past experiences in all the workstations they had occupied.

The first question asked the participants how many workstations they had occupied for a considerable amount of time over the course of their career. It was important to allow this as participants could only respond to features in the physical environment that they had been exposed to. For example, if a questioned asked if multiple computer monitors increased their creative level they would need to have experienced this in at least one situation or they would have to check off “Not Applicable” available as a choice for each question. The investigator also wanted the participants to be allowed to respond freely. Naturally, people reflected and compared past experiences when cued by a question. The design of part 2 of the survey also increased the number of workstations that would be ranked in this survey increasing the reliability of the data collected.

Part 3 examined the properties of each of the participant’s overall office or home environment while sitting at their workstation. All 20 questions were again developed from the information collected in stages one and two of the research and styled in a modified 5 point likert scale format with the ranking options of very positive, positive, neutral, negative and very negative (see Appendix D, survey part 3). Again the participants were allowed to pull from past experiences as in part 2 of the survey. The investigator wanted to research the workstation in isolation, initially for this research project, but understandable the participants in stage one were not able to separate the workstation from the total workspace so as a facilitator the investigator allowed the participants to determine the direction of this exploratory research.

Part 4, of the survey, collected information on demographics with 5 questions. This allowed the investigator to see the distribution of participants and be able to use

this information for discussion of cross-tabulated questions that are presented later in this document (see Appendix E, survey part 4).

Part 5, of the survey, returned the participant to their present workstation and asked them to rate overall experiences related to the space. All 4 questions were styled in a modified 5 point likert scale format with the ranking options of very positive, positive, neutral, negative and very negative (see Appendix F, survey part 5). There was again an option to check off “Not Applicable” if the participant had not been exposed to the variable in question.

Part 6, of the survey allowed the participant to write a narrative about how their workstation encourages their creativity (see Appendix G, survey part 6). They were also asked to list the top 3 features in order of importance. This information would be compared to the data collected from the narrative process in stage one; triangulating all the research results. It would also identify variables that may have been missed. A high number of narrative responses would validate the variables in the themes and produce reliable data. The investigator pulled the codes, on the phenomena of creativity, and created themes independent of stage one before comparing the results from stages one and four.

The detailed analysis of the data collected from all four stages was presented later in this thesis document under “Results Analysis”.

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Chapter 4

Results Analysis

Interpretation of the Data

Extensive qualitative data was collected through the narrative process on the phenomenon of creativity of Interior Designers at their workplace in stages one and four of this mixed method exploratory research. These narratives were analyzed through the extraction of codes (phrases) to produce themes pulled by the 2 participants in stage two and the investigator in stage four. It is expected in qualitative research that the investigator includes some of their own views in their interpretation of the findings because they can never completely remove themselves from interpretation and personal experience. The reader should be aware that the investigator for this study is a professional in the field of Interior Design and the creative process holding a Bachelor of Interior Design since 1979 and having extensive experience as a practicing Interior Designer and Interior Design Educator.

A triangulated design analysis was implemented in this study to validate the data by converging the findings - both qualitative and quantitative (Creswell 2008, p.564), from stage one, two and four to produce a list of variables in the physical environment that the sample group in this research felt encouraged them to be creative at a workstation or other place designated for work in a commercial, or home office environment. The qualitative and quantitative data collected were given equal weight in determining the order of the variables on the final list produced as the narratives were used to produce the survey that produced quantitative results.

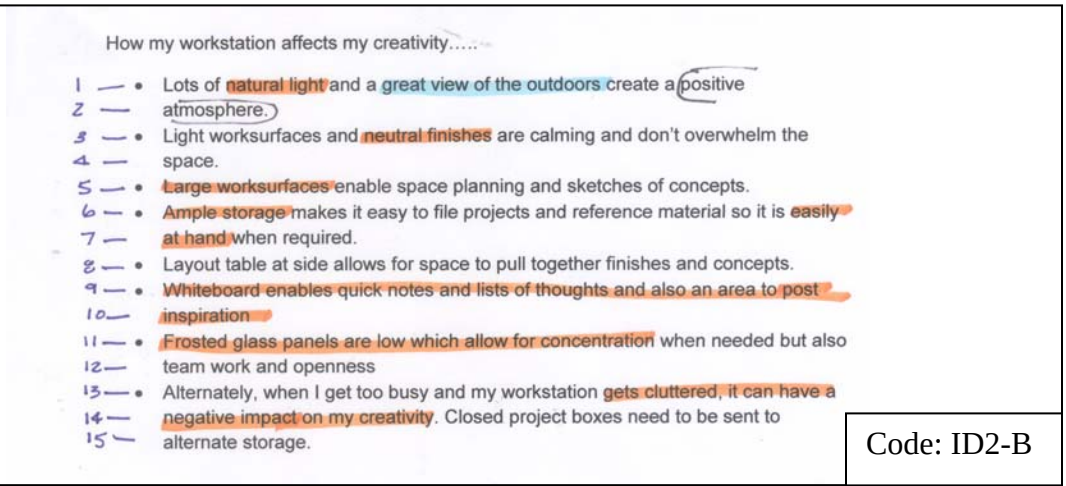
Stage One - Results Analysis

In stage one 12 Interior Designers, 2 men and 10 women, across Ontario, Canada completed a narrative, on how their present workstation encouraged their creativity through the physical environment. These participants were also requested to create a set of 3 drawings that illustrated this workstation and the immediate surrounding area to assist with the understanding of the narrative. The instruction packages were well received and none of the participants contacted the investigator with questions related to what they were asked to complete. One participant emailed to tell the investigator that she had not received the package and her mailing address was confirmed and another package was sent out immediately. The submission date was extended to give this participant time to complete the project. Two participants emailed to thank the investigator for the extension of the submission due date. Each participant sent the completed package to the research assistant, Helen Pearce, at Fanshawe College who coded the work by giving each Interior Designer a number and removing anything from their work that could personally identify them. Interior Designer One was given the code ID1 and this coding system was used to refer to the participants (ID1 through to ID12) in the discussion of the findings. All 12 sets of these drawings are shown in Figures 4.2 to 4.13 under “Stage one and Stage Two – Results Analysis”. The investigator initially made no analysis of the data collected in stage one until after focus session in stage two was completed. Therefore the findings for stage one and two were discussed together.

Stage One and Stage Two - Results Analysis Combined

In stage two, 2 Interior Designers, both male, participated in pulling codes (phrases) from the narratives and organizing them into themes related to the subject of this study. Both of these Interior Designers had participated in stage one. The two participants knew each other and worked well together on this task. Neither of the participants had any experience with this type of research work and found the directions given by the investigator using a narrative of her own titled "The Best Vacations" on extracting codes from a narrative and developing themes was sufficient for them to understand the process.

Each of the 12 packages, which included the narrative and 3 drawings, were reviewed by the 2 participants to pull phrases and develop themes. A letter code had previously been given to each package by the research assistant and the lines in the narratives were numbered to allow for later referencing (see Figure 4.1).


How my workstation affects my creativity.....

1 • Lots of natural light and a great view of the outdoors create a positive
2 atmosphere.
3 • Light worksurfaces and neutral finishes are calming and don't overwhelm the
4 space.
5 • Large worksurfaces enable space planning and sketches of concepts.
6 • Ample storage makes it easy to file projects and reference material so it is easily
7 at hand when required.
8 • Layout table at side allows for space to pull together finishes and concepts.
9 • Whiteboard enables quick notes and lists of thoughts and also an area to post
10 inspiration
11 • Frosted glass panels are low which allow for concentration when needed but also
12 team work and openness
13 • Alternately, when I get too busy and my workstation gets cluttered, it can have a
14 negative impact on my creativity. Closed project boxes need to be sent to
15 alternate storage.

Code: ID2-B

Figure 4.1 Example of Coding and Referencing the Narrative.
Sentence numbering was completed by the investigator. Highlighting of the codes (phrases) completed by participants in stage 2. A typical narrative submission from Stage One (2011).

The two designers had few questions during the session for the investigator who acted as a facilitator only and sat at the far end of the conference room reading to make the participants feel comfortable.

The participants took turns using the coloured markers supplied to highlight the phrases in the narratives that would then be transferred immediately onto sticky notes. They were instructed to use one colour of sticky notes for each theme developed and post them on the 11” x 17” white papers previously taped to the whiteboard in front of them (Figure 3.5). The drawings proved invaluable as the participants referred to the plans and perspectives when interpreting each phrase in a narrative. The packages, from the 12 participants, were reviewed in order starting with the work from ID1 (see Figure 4.2). Stage two took 3 hours to complete. Table 4.1 shows the themes developed by the two participants in stage two and correlating quantitative information produced.

Table 4.1 Themes Extracted from Narratives in Stage Two

Themes	Number of Codes (Phrases)	Number of Participants (N= 12)
Overall Environment: Positive Reaction	29	10
Physical Elements of the Space: Positive	46	11
Physical Elements of the Space: Negative	17	5
Overall Space: Negative Reaction	9	5
Personal Space (13 positive)	15	6
Views (All 5 positive)	5	3
People in Space	2	2

Note. Table shows quantitative data produced from stages one and two of the research project that indicated evidence that the sample group of Interior Designers perceived their workstations to have positive variables related to encouraging their creativity through the physical environment The need to verify these findings to produce a list of positive features in stage four of this study were supported by these results.

Contributions of the Participants in Stage One and Two.

The 2 Interior Designers, who participated in stage two, had the freedom to lead the direction of this research with the development of the themes. The decision to divide the codes into positive and negative themes that affect creativity in the workplace was not even considered by the investigator at this point. Therefore the survey questions produced for stages three and four took a modified 5 point likert scale format with the ranking options of, very positive, positive, neutral, negative and very negative, with the support of the theme development in stage two. This of course could not have been achieved without the effort put forth by the 12 Interior Designers, 10 women and 2 men, who participated in stage one and went beyond the parameters of the research question being presented to discuss the negative variables as well as the positive variables of the physical office environment. Also, 11 of the 12 participants decided to discuss the office beyond the barriers of the workstation being studied. Lastly, and one may contribute this to serendipity, the 12 Interior Designers who volunteered to participate and the workstations that they happened to be occupying in November of 2011 produced data that touched on the full range of possible variables.

Content of Themes from Narratives – The Variables.

The variables that the 12 participants, in stage one, perceived to affect their creativity were extracted by the 2 participants from stage two from the narratives and drawings to produce themes. Presented here are the results of the investigator's extraction of phrases directly from the narratives of each participant with effort not to change the content. Statements extracted directly from the narratives or the notes on the drawings written by each participant about the work environment were placed in

quotations. Positive and negative statements were included. The author's writing for the commentary from the narratives was changed to present tense to fluently incorporate the phrases from the narratives that were written in present tense.

Commentary from the Narratives.

ID1's drawings show a space with lots of windows and generic, one size fits all workstations with low glass panels that allow everyone in this area to have access to daylight and the interior and exterior views (see Figure 4.2).

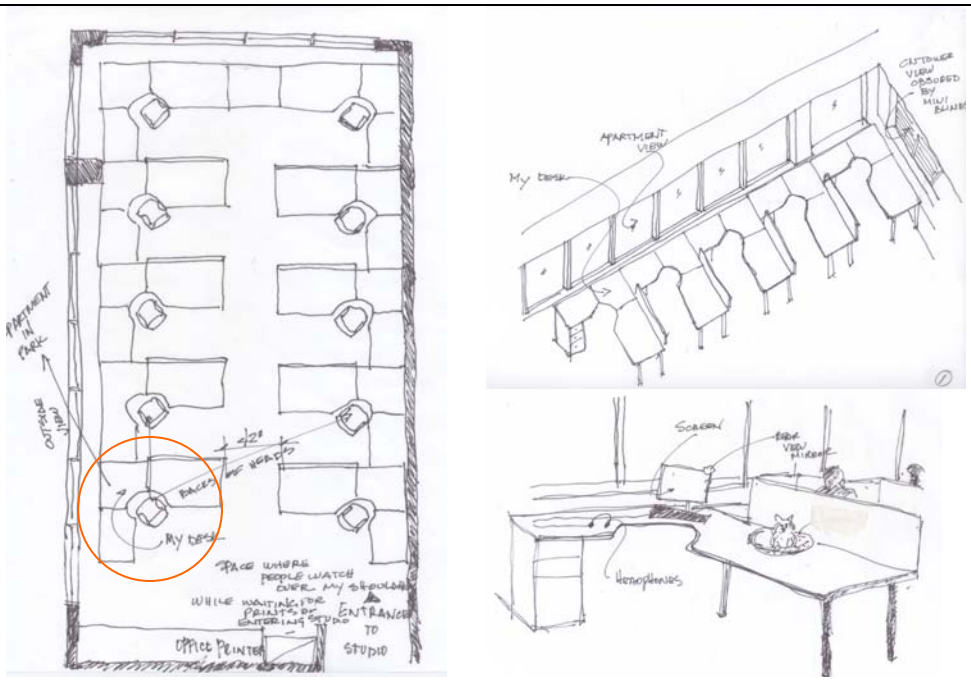


Figure 4.2 Drawings from Interior Designer 1 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID1 is in a unique position with his/her back to the printer; a "space where people watch over my shoulder while waiting for prints and entering the studio" and to solve this problem ID1 "installed a rear view mirror on the top right hand corner of my monitor…I startle easily". Windows offer ID1 "natural light sometimes so much so blinds cover the skyline view of the CN tower…I face….high rise apartment building

where there is always something happening on the balcony all times of the day and year". ID1 states, "I see the backs of all my colleagues' heads…..have my headphones on; not listening to music but TV and movies to muffle the studio chatter that can get very loud …allows me to concentrate on my work but still lets me hear conversations related to work."

ID1 is the only participant in stage two of this study that has "a small doggie bed on my desk where a Yorkie sleeps all day and greets clients as they enter the studio…he's a hit with everyone and a calming influence".

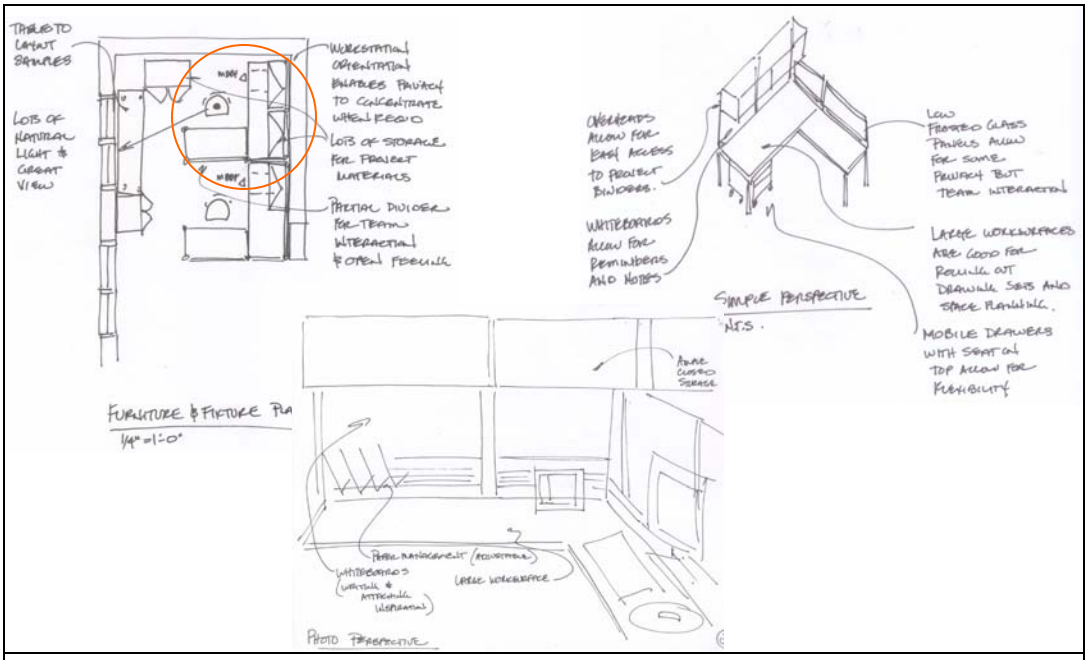


Figure 4.3 Drawings from Interior Designer 2 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID2 has a workstation positioned so he/she can see one co-worker and other people that approach (see Figure 4.3). There is "lots of natural light and a great view of the outdoors" that " creates a positive atmosphere …light surfaces and neutral finishes are calming….large work surfaces …ample storage makes it easy to file projects and

reference materials…whiteboards enables quick notes and list of thoughts and also an area to post inspiration". This workstation has low frosted glass panels that "allows for concentration …and team work". The occupant of this workstation feels "when…my workstation gets cluttered it can have a negative impact on my creativity" and recommends that "closed project boxes be sent to alternate storage".

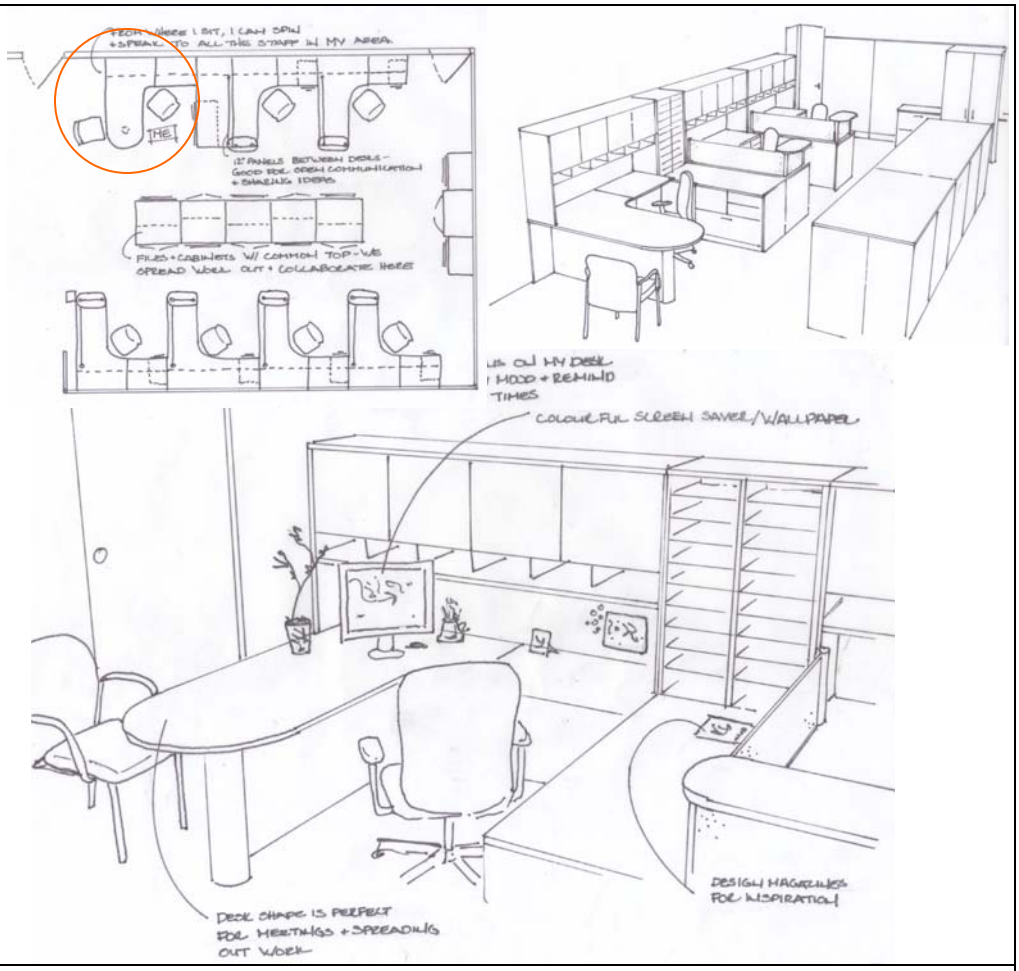


Figure 4.4 Drawings from Interior Designer 3 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID3 sits her workstation and finds "that close contact and interaction with my coworkers is important…low panels and open concept leads to more conversation… overhear a challenge that someone is having and others will chime in with a solution"

(see Figure 4.4). The workstation and location is recently new for ID3 and "the new desk has a bullet end for interaction with sale representatives" where "we can spread out work…discuss projects". ID3 mentions "drawbacks to the new space …moved" deeper into the building and when the sales staff are out "I am all alone…miss the interaction with the staff at the front of the office" and miss the "windows…could no longer see out and I found that it is really affected my mood and creativity". A skylight was added to the new area "which has drastically improved my well being". ID3 has added personal items to his/her desk that "is not particularly inspiring…dark in colour…I can imagine ways this desk could be improved – colourful, patterned, fabric on the tackboard…However, I do not have control over these things".

ID4's office area has "workstations that are all the same" for everyone and the "the furniture layout and components are outdated…adjustable keyboards do not work with laptops" (see Figure 4.5). "In terms of creativity, there is really nowhere on my desk surface to layout drawings or sketches and most of the time I turn to the table behind me to mark up drawings, projects, or even just to spread out magazines." ID4 finds the "operable windows are a real treat…sounds of the street below makes me feel connected to the outside world…the abundant natural light makes all the difference in the world…potted plants in the deep window sill". When all the staff is in at the same time "the noise levels can make it difficult to speak on the phone or concentrate on any dedicated task…on some days it is impossible to focus". ID4's office is LEED certified and "automatic light sensors kept going off while I was working…when trying to stay late to work…constant disruption". ID4 finds the workplace "is not conducive to the way we like to work…try to enhance the environment within these constraints…spare

workstation has been temporarily turned into our communal cappuccino/coffee/tea/goody station …portable stereo and a selection of CD's which are always on…brought in our own design classic furnishings for a common central work area and for guest seating".

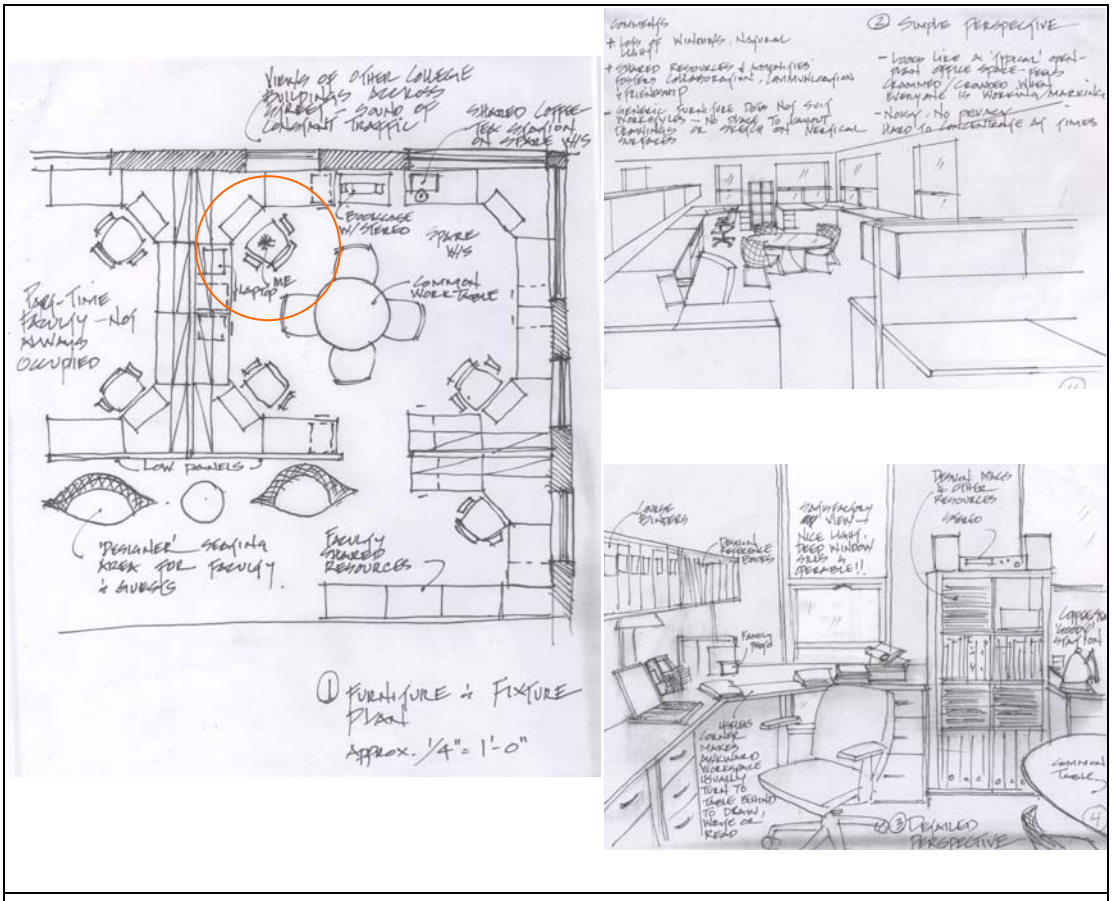


Figure 4.5 Drawings from Interior Designer 4 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID4 comments about her team "collectively we dream ….some comfortable chairs, maybe a sofa and a large work table with lots of design books all around….I have even joked about putting up a cubicle curtain around my workstation when I need some privacy!". ID4 believes "there is little space for self reflection or

personalization…if it were not for the people I work with…there would be nothing…to this space that would enhance my creativity or desire to be creative".

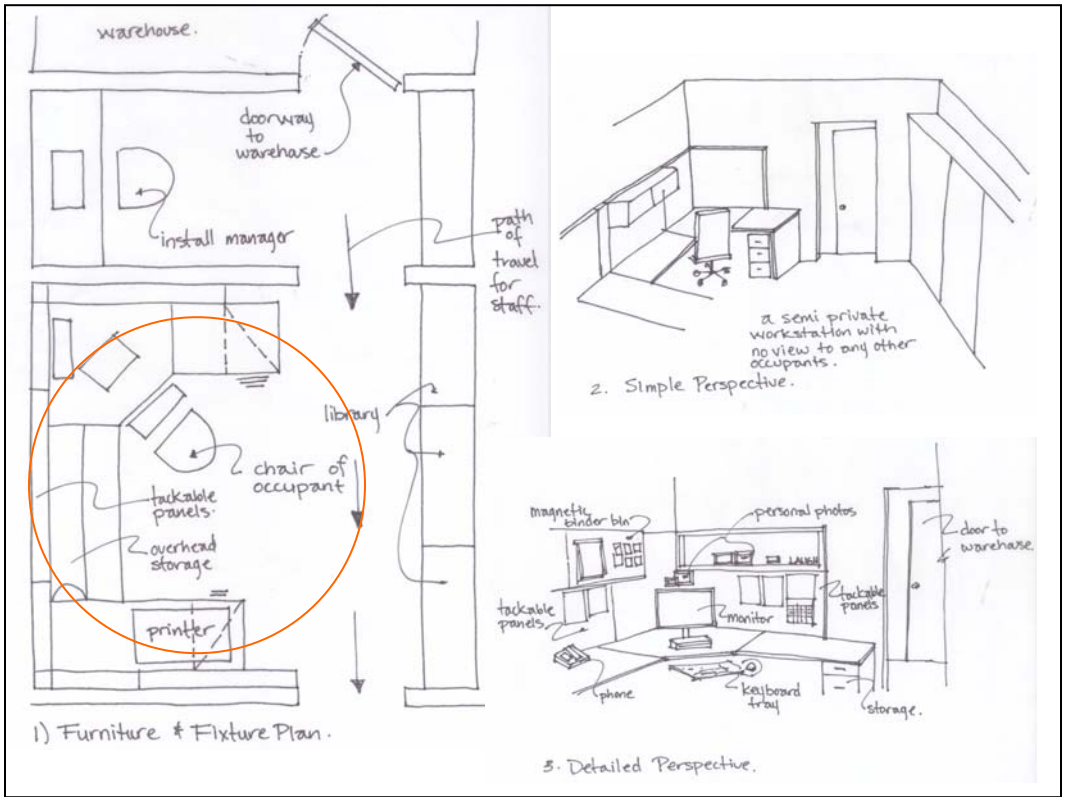


Figure 4.6 Drawings from Interior Designer 5 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

"Every morning" ID5 "strolls into the office with coffee in hand….sit myself directly in front of my monitor, log in and start my day" (see Figure 4.6). ID5 listed five physical features: "focus of the workstation is my computer screen, my workstation is located next to our installation department and warehouse…install manager, there are no windows or exterior views, and there is a large area of tackable/magnetic surfaces" in an effort to "scrutinize what exactly it is that my space provides me in terms of creativity". ID5 points out that the location of her workstation "is often busy and the noisy atmosphere can definitely be distracting…very little privacy and people are often

travelling through my workspace to get to other areas of the office…conversations are loud…noise and distraction are definite deterrents to creative thought processes…times when I need to switch tasks to accommodate the atmosphere". ID5 reflects, "I find having a coworker, such as our install manager, located close …asset…bounce ideas and/or scenarios off of them…creative ideas moving in a productive direction." ID5's workstation was "specifically designed to fit the space…as well as fit myself…amenities located conveniently and ergonomically…ergonomic chair…avoid unnecessary stress on my body …adjustable keyboard…ensure a healthy working environment…no one can be at their creative best if they are physically not comfortable". ID5 writes, "the fact that there is no direct view…to the outdoors can be a negative factor in regards to creativity…connection to outdoors would provide a visual break from workload and a sense of calm… a view of natural elements…times my mind stalls and it is common for me to get up and step outside…to refresh my thoughts." ID5 mentions he/she is at her workstation for long periods of time and sometimes more than 5 days a week so "the physical location…form has a direct impact on my creativity…functional yet comfortable atmosphere…to tap into my creativity".

ID6 feels lucky to be working at a furniture dealership that "affords me access to some great furniture…allows me to change my workstation often" (see Figure 4.7). ID6 refers to his/her workstation as "a typical private office layout…lots of surface space…ergonomic…affords plenty of storage". When asking him/herself if this workstation encourages creativity the answer was "no, in my line of work I need room to display things which I find inspiring…in colours I find attractive…my only display

space is blocked by my computer… need to converse with colleague but we are blocked by panels" there is a "need to see their face…spend more time together than on the phone so acoustical privacy is not very important".

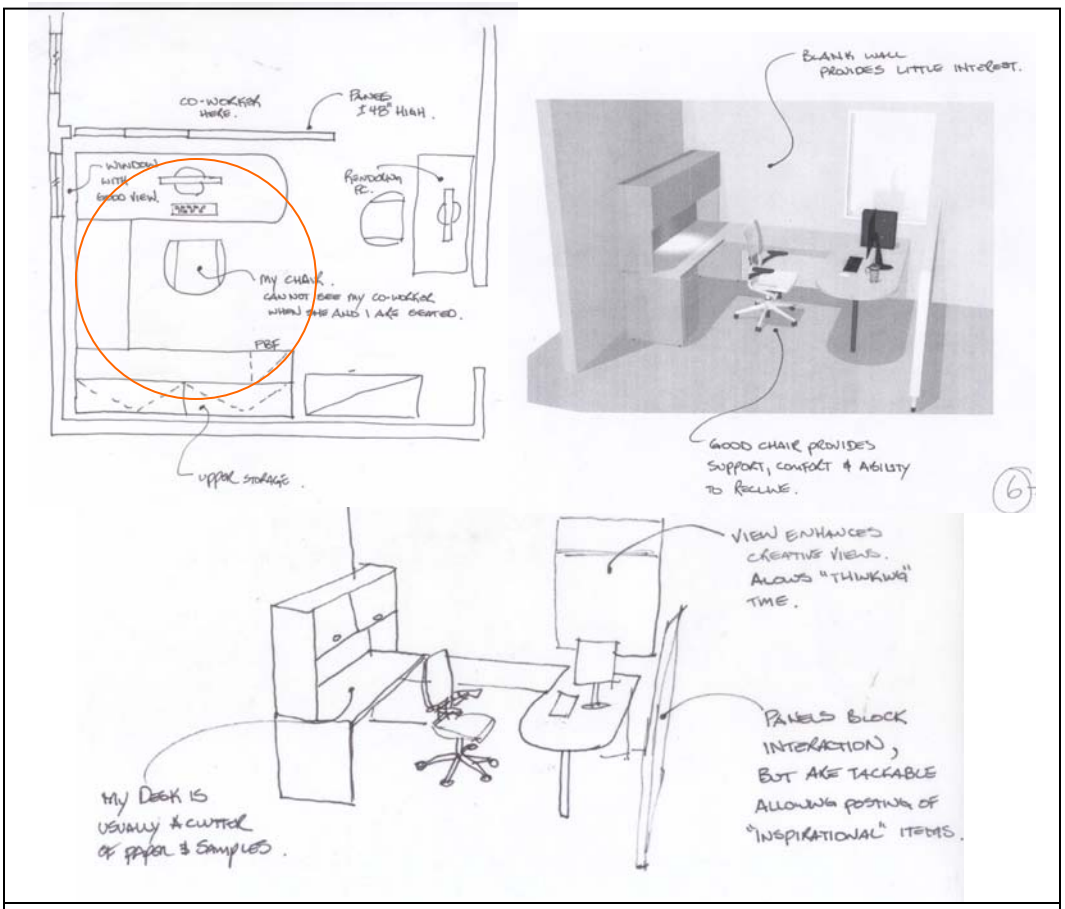


Figure 4.7 Drawings from Interior Designer 6 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID6 writes, "The good thing about my workstation is that I can see out a window with a nice view of trees across the road and traffic going by. I need my window view. Creativity is definitely possible when the mind is able to wander." In terms of "comfort in one's workspace", ID6 feels "an occupant needs the ability to personalize…pictures of children…artwork…plant …home feel while giving me the

tools to work is essential". At the end of the narrative ID6 states, "Oh and I have a great chair too. I do believe you need to be comfortable to be creative!"

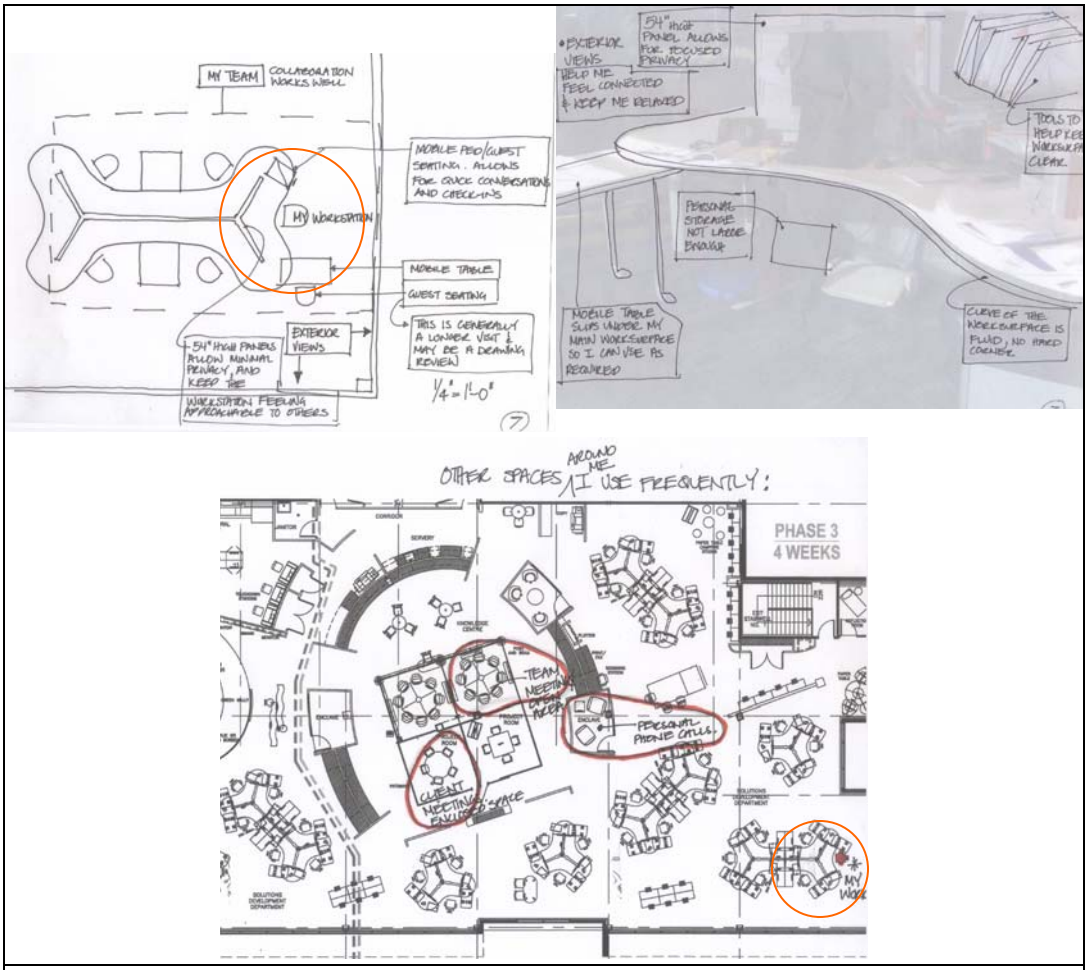


Figure 4.8 Drawings from Interior Designer 7 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID7 feels his/her workstation "has affects on my creativity both in a positive and negative way" (see Figure 4.8). The positive features are "the workstation is at a 120 degree angle…feel unobstructed by a corner…exterior windows with a sill that sits about 30 inches at finished floor…clear visual of exterior from the side and back…see what is happening outside …allows me to ponder ideas and think clearly…best way forward on any given task".

ID7 writes that his/her workstation “has 54 inch high panels on the interior corner only…leaves me exposed to people coming up and down the fire stairs…I can hear 4 other conversations …good because these are my team members but negative in the sense that we all are conscious of the fact that we can be heard…expressed in our tones and in our whispers”.

ID7 notes on the drawing that there is a mobile table, guest chair for reviewing a drawing, and a mobile file/guest seat that allows for quick conversations and check-ins. The third drawing shows the total workplace and other spaces that he/she uses frequently such as an open team meeting area, a closed client meeting area, and an enclave for personal calls, but does not refer to these items in the narrative.

ID8 has worked in many different settings over the course of his/her career and is now in an open workplace with sound masking that “proves to be the best for my style of working” (see Figure 4.9). ID8 describes the attributes of the workstation: “90 square feet includes space for personal wardrobe and book storage, spaces to accommodate large scale drawings architectural and interior finish samples, all within easy reach of my chair…a shared meeting table…a cushioned top storage that can be used for a single visitor when review on the computer screen is required… …two key elements…visual access to showroom…adjacent shared meeting space”. ID8 writes that he/she works at a furniture dealership and “it is ideal for me to be aware of my surroundings…accessible to other staff members…to comment on conversations around my workstation that involve a design opinion or questions…share your thoughts or experiences with current and past projects”. ID8 feels the “most beneficial” feature of the workstation is the shared standing height work surface between the two

workstations that is labeled on the drawings as a collaborative work surface. ID8 mentions that "the office does provide two more private spaces…not dedicated".

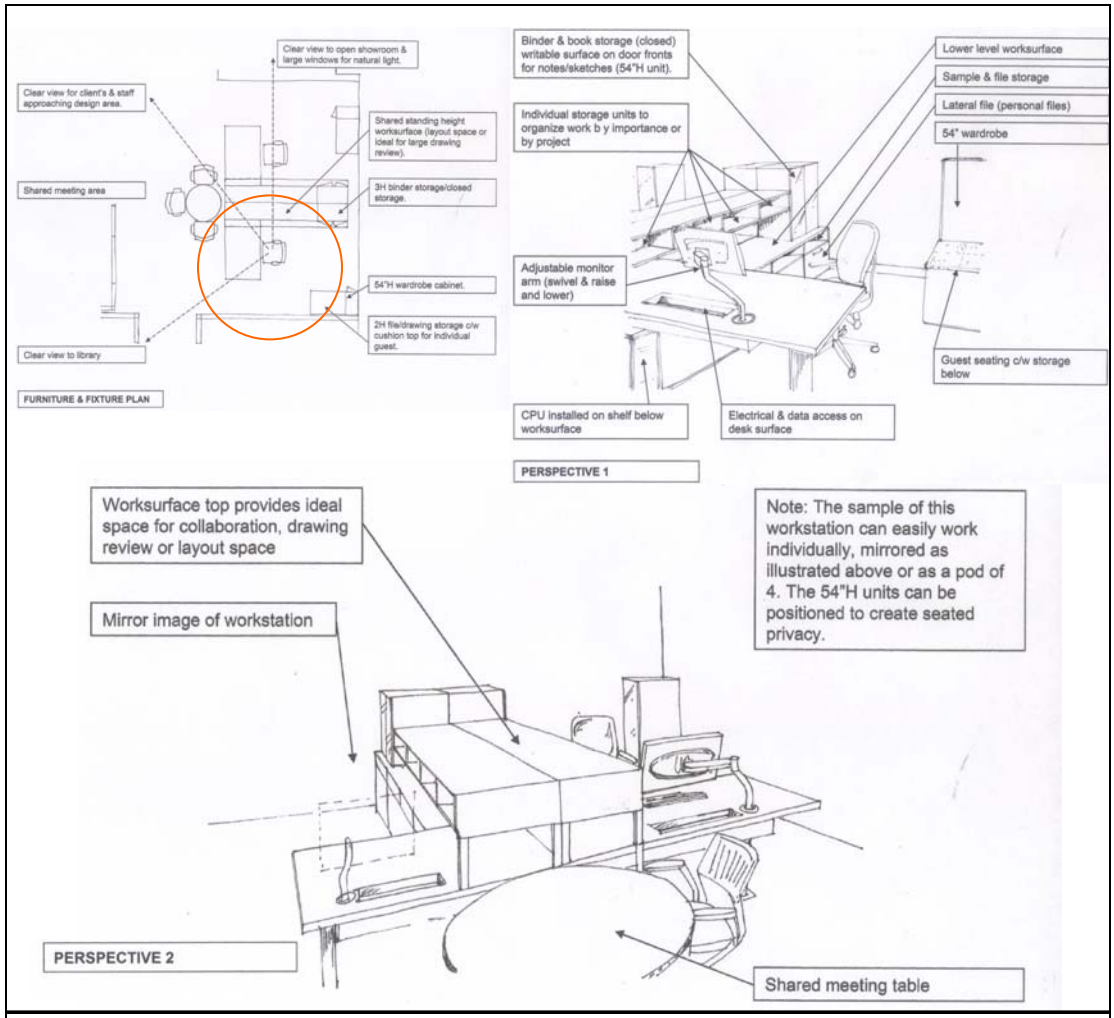


Figure 4.9 Drawings from Interior Designer 8 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID8 feels "because our work is creative based, the open workstation …fosters the interaction of thoughts and ideas either through discussion or osmosis".

ID9 feels "the work environment does have an impact on my creativity and how I work…our office recently renovated…I now have a new location…central to our

design department…used to reside closer to the window with a more enclosed workstation…now I am exposed on 3 sides…now approached by people from behind which was a big change to get use to" (see Figure 4.10).

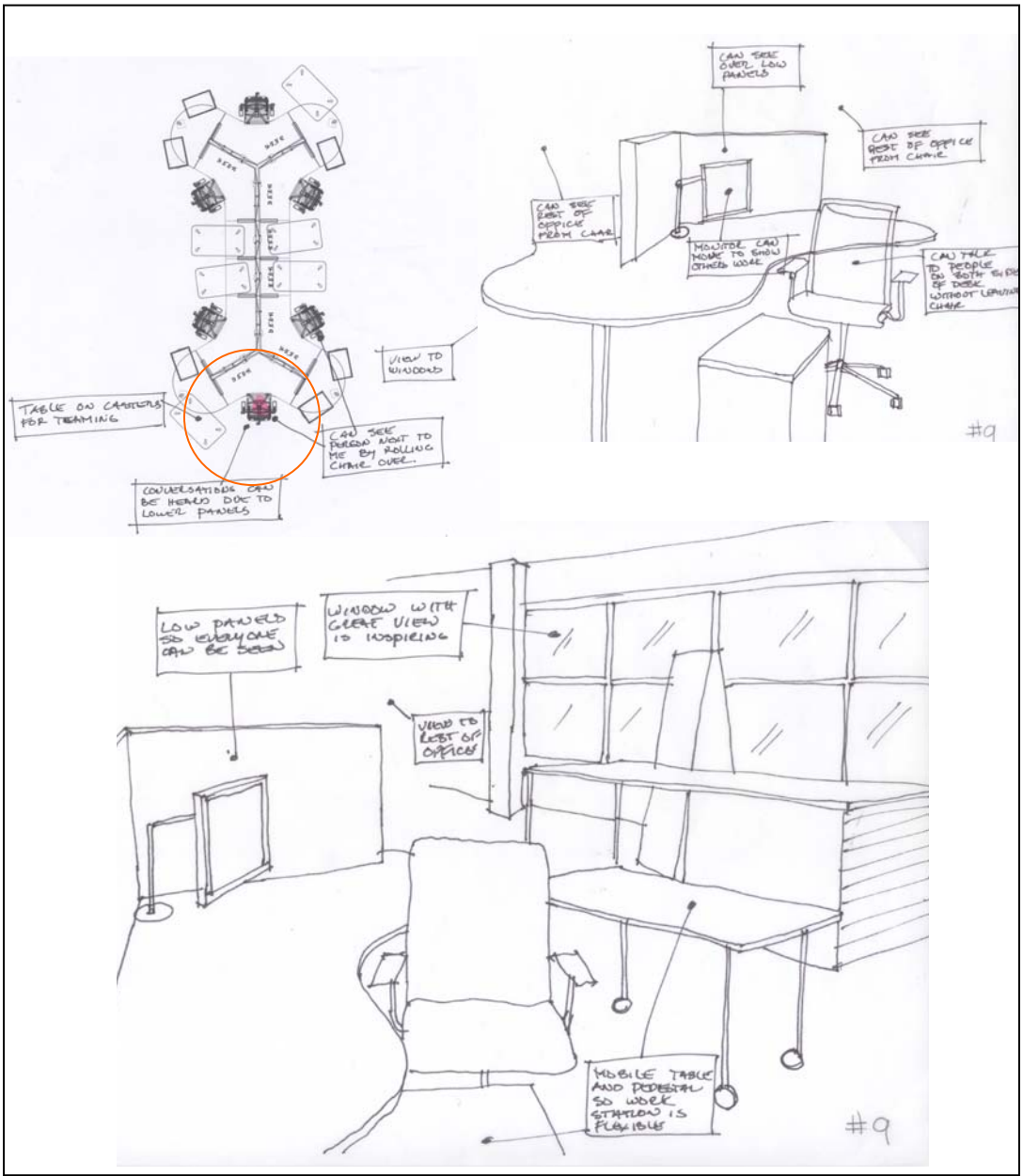


Figure 4.10 Drawings from Interior Designer 9 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID9 describes the change, “After 5 months in this position I have noticed that team interaction has increased and feel more approachable…also hear more conversations which enables me to become involved in the conversations or comment on the things I hear…often walk by other workstations and add input to projects…hope …enhance the outcome of the project.”

In the annotated drawings, ID9 notes the ability to see over the low panels to the rest of the office from his/her chair, the computer monitor can move to show others work, and the mobile table and pedestal with seat cushion adds flexibility. On the final perspective, ID9 notes “window with great view is inspiring”. ID9 comments on his/her new physical environment that is “very current… has inspiring colours and finishes…work surfaces are very flexible enabling me to change my workspace according to the demands of a particular job….overall I feel the work environment does enhance my creativity”.

ID10 spends a good portion of his/her day on the computer and lists elements of the physical workplace that keeps him/her motivated and creative: one, “dual monitors…reference material on one…documentation on the other”, two, “different forms of paper management…easy access…keep files off the desk…organized”, three, “photos of family and inspirational items allow my eyes to wander when I need a break”, four, “mobile table…large drawings…I also use it to block so no one walks behind me”, five, “mobile pedestal allows guests to sit for brief discussions at my desk”, and six, “120 degree planning…curved work surface for easy flow from one side to the other” (see Figure 4.11).

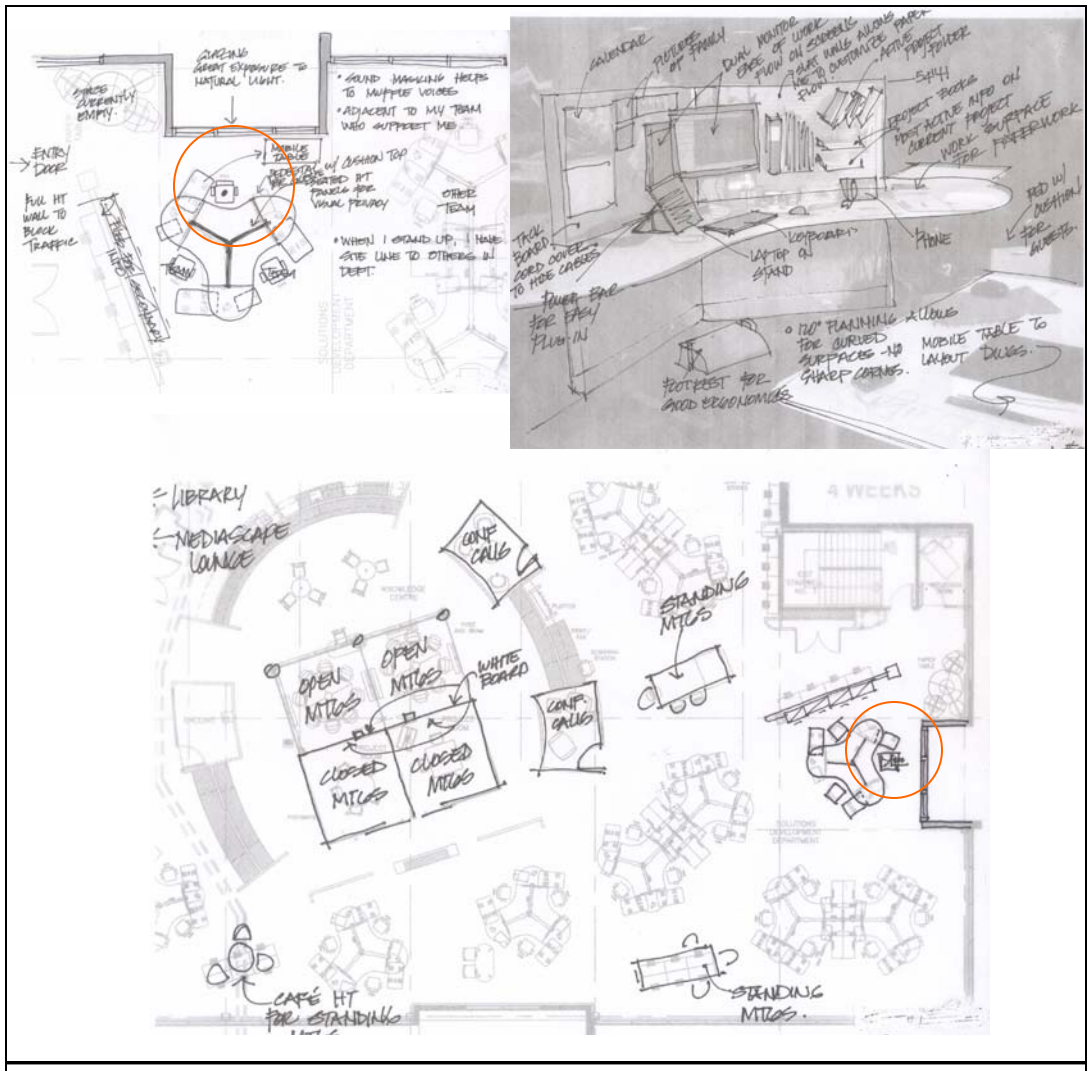


Figure 4.11 Drawings from Interior Designer 10 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID10 writes that, "While there can be disruptions from the people and the work going on around you, it can also inspire productivity and creativity as you view the work of others." ID10 notes, on the drawings, that sound masking helps to muffle voices and that he/she has visual privacy when seated, but has a site line to others when he/she stands up. ID10 points to the glazing behind his/her workstation on the first plan and mentions the "great exposure to natural light".

ID10 then lists areas used away from his/her desk that “allow me to change my environment, work with others, and collaborate”. These areas include: one, “a small room with 2 lounge chairs, and a coffee table for conference and confidential calls”, two, “standing height large tables to view drawings”, three, open and closed “meeting rooms throughout” the office, four, “mediascape lounge which has a large monitor…hook up laptop…review charts and presentations with several people…seated in a relaxing atmosphere”, five, “the sample library has a large surface…pulling together colour schemes…materials”, and six, “standing height tables and chairs around the work space provides locations for impromptu meetings outside of people’s immediate area”. In conclusion, ID10 writes, “The variety of places I have access to for my job allows me to change my environment during the course of a day depending on the type of work I need to accomplish.”

ID11’s workstation drawings do not show placement within the building (see Figure 4.12). ID11 writes about the workstation’s physical features such as “height adjustment… pneumatic surface that adjusts to stand up height…main work surfaces functions mostly for computer work…bins that sit on the floor…easy throw all…12 inch deep surface to right allows me to lay out documents for easy viewing…standup height mobile cabinet allows” more layout space and that “all of these items affect how I work throughout the day, but I am not sure that any of them affect my creativity at any given time – with the exception perhaps of being able to have various surfaces layered from floor to 42 inches high and various open bins-which allow a visual to everything that I am working on”.

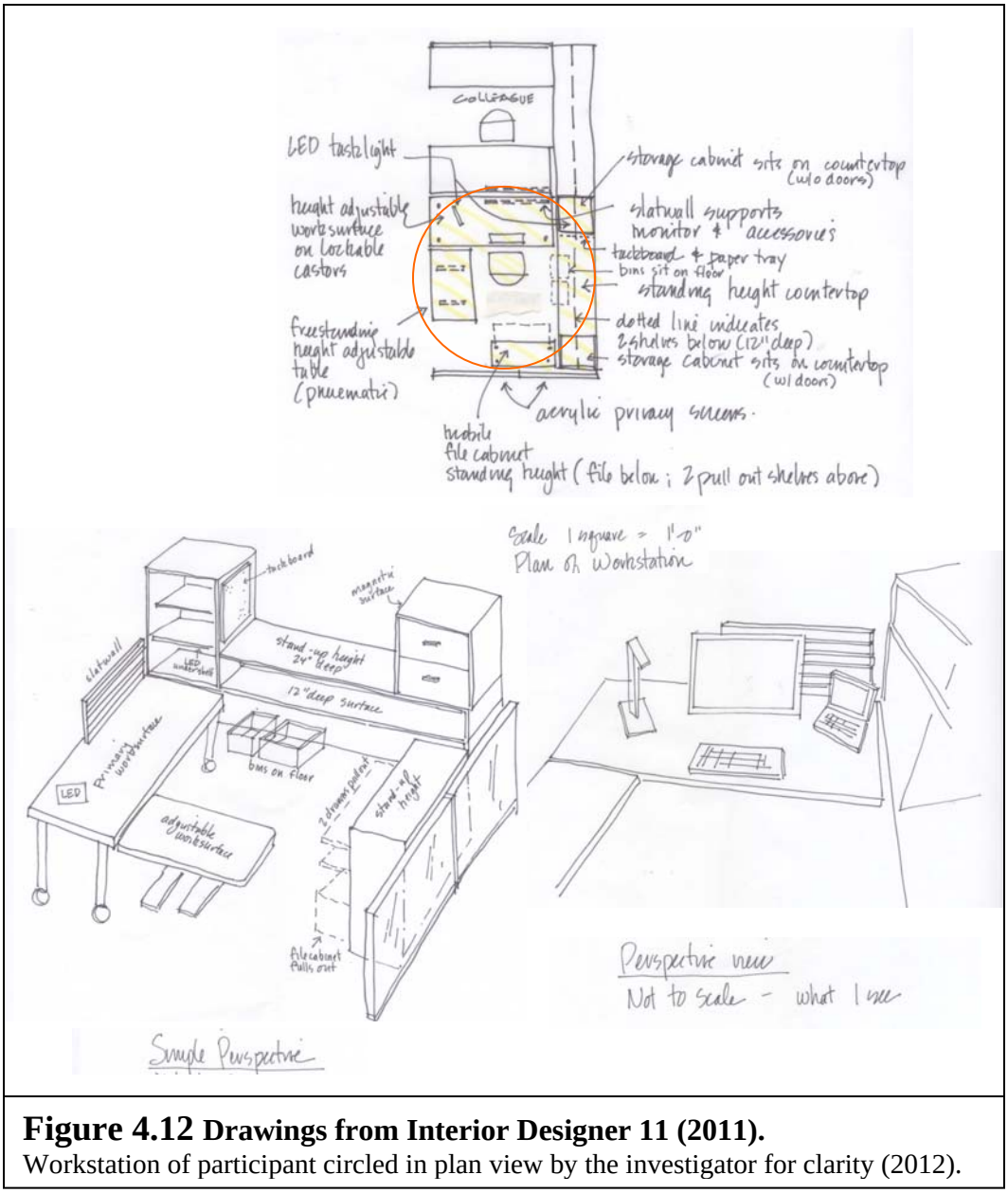


Figure 4.12 Drawings from Interior Designer 11 (2011).
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID12 is an independent Interior Design who has "two regular work areas…one areas is in my home…dedicated work space of about 180 square feet …the other area is located on the second floor of a small commercial building owned by a large union painting contractor…this area will be the focus …use the majority of my workday".

ID12 has multiple workstations and the total 320 square foot work space also has an adjacent boardroom meeting area not shown (see Figure 4.13).

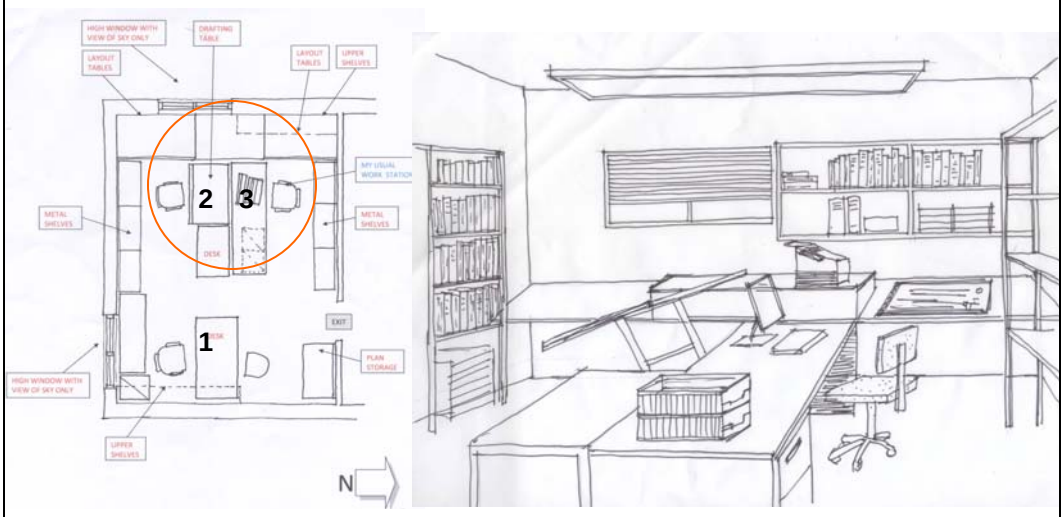


Figure 4.13 Drawings from Interior Designer 12 (2011)
Workstation of participant circled in plan view by the investigator for clarity (2012).

ID12 mentions the features of the room such as "metal shelving for catalogues and samples, wood shelving for books…remaining walls have hung samples…two small windows that are above eye level when seated…and the lighting is standard cool white fluorescent luminaires". During, "a typical day I would work at three different workstations…station 1 is a standard desk…bookkeeping, filing…small one on one meetings…station 2 is a 42"x 36" drafting table…sketching, preliminary design layouts, manual drafting…adjacent… sloped side table/small desk for plan layouts… Station 3 is my computer area …computer sits on a large layout work top…adjacent a sloped layout table for drawings….printer/fax/copier".

ID12 writes, “The space is not conducive to design…dull, uninspiring and often very uncomfortable…painted neutral beige over textured commercial wallcovering …ceiling white… carpet is commercial grey loop…heating and cooling is always a problem and the controls are located on the lower level…windows face south and west …natural daylight is lacking and when it is sunny there is too much brightness which necessitates the use of blinds…little space for personal items…I am not a very tidy person and find their is always clutter, open plans, files, samples that need to be placed back on the shelves.” ID12 admits that “as uncomfortable as this space seems to be, I do require it, and it does work”. The office “in my house is comfortable”, but “I find myself easily distracted…need the other office away from all the comforts” at home. IDC 12 asks, “Does the space inspire or does the space facilitate the inspiration?” IDC 12 answers him/herself , “I believe inspiration comes from experience, observation, research; the feelings created by life… the workspace must be such that the designer can document the acquired inspiration with all the facilities available…my workspace grows to my individual style and requirements…no master plan…created for various functions to occur…I do not find any inspiration from my workstation…I am alone…cannot even find inspiration from others…my workspace works well for work.”

Results from Narrative Analysis.

The 2 participants, in the focus session, pulled positive themes from all 12 Interior Designer narratives (see Table 4.2). This table shows frequency of the code cited, number of participants citing code, and percentage of participants citing code. Notes on the annotated drawings were not included in the themes.

Table 4.2
Descriptive Statistics for Positive Codes Extracted from Narratives in Stage Two

Code	Frequency	Participants Cited	Percent (N=12)	Cross Verification Stage Four Themes
Ergonomic furniture	8	5	41.6	6
Mobile pedestal w/ cushion seat	2	2	16.6	5
Adjustable work surfaces	1	1	8.3	2 & 6
Multiple computer monitors	1	1	8.3	3
Amount of work surface	7	4	33.3	2
Posting surfaces	2	2	16.6	3
Ample storage	6	5	41.6	2
Privacy	1	1	8.3	4
Shared work surfaces	1	1	8.3	5
View & use of layered surfaces	1	1	8.3	2
Music/ TV Noise	2	2	16.6	3
Hear conversations	3	3	25	4 & 5
Vertical drawing surfaces	1	1	8.3	3
Personalization of space	11	5	41.6	5
Pets	1	1	8.3	9
Flexible workstation	5	5	41.6	2
Window/daylight/view	12	6	50	1
View inside building	1	1	8.3	1
Neutral finishes	1	1	8.3	11 & 12
Colours & textures	1	1	8.3	11 & 12
Adjacent coffee area	1	1	8.3	7
Access to meeting room	8	3	25	7
Room w/ lounge furniture	1	1	8.3	7
Shared standing Height surfaces	2	2	16.6	2 &5
Sound masking	1	1	8.3	4
Visual access to team members	7	3	25	5
Workstation designed for user	2	2	16.6	3
Variety of places to work	3	2	16.6	7

Note. Table shows positive codes (phrases) that were selected by 2 participants in stage two from the narratives produced in stage one. Frequency of the code cited, number of participants citing code, and percentage of participants citing code are indicated.

The shaded portion of the table identifies the triangulation of data between stage two narrative codes and stage four themes (see Table 4.3). Theme 8 “artificial lighting” and theme 10 “air conditioning” are not represented here as these codes were negative codes in stage two.

Each participant could only respond to physical features they had been exposed to at the time of this study and the format of presenting the results had limitations. For example ID5, who had no window, wrote “the fact there is no direct view… to the outdoors can be a negative factor in regards to creativity” and this information could be used to strengthen the support for the “Window/daylight/view” code. ID8 also had no direct windows access but noted the importance of “visual access to our showroom” which was given its own code, but could be included in a discussion of window views because a note on his/her plan indicated a “clear view to open showroom and large windows for natural light”. ID9 only noted “window with great view is inspiring” on his/her perspective drawing which is a very positive statement not recorded in Table 4.2. ID10 also only noted “glazing great exposure to the natural light” on his/her plan drawing. ID12 had a restricted view from the high placement of the window in his/her office and “the natural light is lacking because of the orientation of the office area” which is also not presented. Therefore, even though only 6 of the 12 participants in stage one wrote that the “Window/daylight/view” affected their creativity, 11 of the 12 participants commented in some way on its importance.

Positive codes were found in all 12 narratives during the focus session. This is significant as it supported the premise of this study that physical features of the workplace can affect a worker’s creative levels.

Each of the 12 participants in stage one had their own writing style that required the reader to decide if the narrator was mentioning a physical feature that encouraged their creativity in the workplace or were just describing the components of their workstation and /or workplace that allowed them to function at work. The focus session

members recorded all physical features mentioned as positive unless the narrator described otherwise. The investigator was aware that some misinterpretation could occur during theme development because the narrators were not there to ask if the themes were pulled accurately. The narrative process, where the researcher extracts the codes while consulting with the participant, was not possible for this study. The stage four survey design was developed to verify that the codes extracted from stage one and stage two were valid.

Stage Three – Results Analysis

The survey design developed by the investigator from the information collected from stage one and stage two was tested by a group of 4 Interior Designers, 1 male and 3 female. All four participants completed the online survey that was facilitated through "Survey Monkey" and three reported their reactions to the design of the survey in a focus group with the researcher. The one Interior Designer, who had participated in stages one and two, felt the information previously collected was incorporated nicely into the survey design proposed by the investigator for stage four. The other two Interior Designers offered a fresh perspective on the material in the survey which strengthened the clarity of the final survey for the user.

The participants where given a copy of the survey at the beginning of the focus group for discussion. The 3 participants suggested that the estimated time to complete the survey questions 1 through 71 should be changed from the proposed 15 minutes to 20 minutes. They found the 20 minutes designated for the optional narrative component was sufficient. The group then proposed the addition of a descriptive paragraph after the title of each part of the survey to clarify how to interpret and proceed with the

questions. No survey questions were changed, added, or deleted upon the recommendation of the focus group members. The survey length, with 71 questions, was not considered an issue; in fact, one of the Interior Designers in the focus group expressed that the survey design allowed him/her the time to evaluate their workstation in terms of their creativity in that space.

The focus group members felt that Interior Designers with home offices should be included in the research project. They also requested that "Not Applicable" be added to the questions where codes were ranked.

All 4 participants revisited the online revised survey and expressed their approval of the changes.

Stage Four – Results Analysis

As previously mentioned, a total of 259, the majority IDC and ASID members, started the final survey and of these individuals 213 finished for a completion rate of 82.2%. One hundred and twenty-nine of these 213 participants (60.5%) completed the narrative component at the end of the survey.

Narrative Results Analysis – Stage Four.

One hundred and twenty-nine participants wrote a paragraph about how their present workstation had encouraged their creativity. Some of these participants also discussed the total workplace just as participants of stage one had done. The investigator coded these narratives by underlining phrases in different colours – one colour per theme – sorting them into 12 themes that developed during this process. The themes produced by the 2 participants of stage two were not repeated as the final themes were to be ranked in order of importance for only the positive influence to the

creative process of an office worker. The codes were counted in stage four to establish the ranking of the themes (see Table 4.3).

Table 4.3
Descriptive Statistics for Positive Codes Extracted from Narratives in Stage Four

Ranking (N=129)	Themes	Number of Codes (Phrases)	Percent	1st Choice (N=62)	2nd Choice (N=62)	3rd Choice (N=62)
1	Daylight and view	82	64	26	7	5
2	Work surfaces	77	60	18	11	9
3	Personal items	70	54	11	7	11
4	Privacy	50	39	9	5	3
5	Collaboration	44	33	6	5	5
6	Ergonomic furniture	30	23	1	2	5
7	Multiple work/play areas	28	22	3	5	2
8	Artificial lighting	27	21	3	4	2
9	Nature	23	18	4	1	2
10	Air conditioning	14	11	1	2	2
11	Décor	14	11	1	1	0
12	Colour	12	9	1	3	3

Note. Sixty-two, of the 129 participants that completed the narrative, listed the top 3 features of their workstation that had encouraged their creativity in order of importance as requested in the instructions. The triangulation of data between stage two narrative codes, developed by 2 participants, and stage four themes, developed from narrative codes by the investigator, is shown in Table 4.2.

Each code in a narrative was awarded one point and placed into a theme. Only one code per theme was documented for each narrative. Therefore if daylight from a window was mentioned twice in a narrative it was recorded as only one code. Therefore the number of codes correlated with the number of participants that supported that theme as shown in Table 4.3. Codes from the stage one narratives reoccurred in the narratives from stage four.

Theme 1: Daylight and View – Positive Codes.

The investigator extracted 82 "daylight and view" codes from the 129 narratives in stage four. Some examples of the sentences, from which the phrases were extracted, are presented in Table 4.4.

Table 4.4
Commentary on Daylight and View Codes from Narratives in Stage Four

	Quote (N=82 of 129)
1	Daylight without glare on computer monitor.
2	Outdoor views and natural sunlight.
3	I have a wonderful wooded view from my office
4	I sit under a sloped skylight – I do not see the streetscape, but I do see the sky and the trees and the natural light is incredible.
5	I need natural light and access to a view.
6	I can see outside into my garden.
7	I also have access to natural light and I find I'm much more creative and productive on a bright sunny day than on a dark, cloudy day.
8	My workstation is surrounded by panels; however the top tiers are glass; therefore I still see natural light in my workstation.
9	Creativity is open and ongoing, enhanced by visuals to the outside world via windows.
10	I have a fabulous studio that overlooks both the ____mountains and _____mountains. Just being here encourages my creativity-so: #1 Location, location, location….I have north light skylights.
11	After 8 years in an enclosed windowless office I now have a 12'long X 6' high window with a view of grass and trees. This is the most significant feature of my office as far as creativity is concerned.
12	I love the fact that I have a North facing building which allows ample natural light without glare.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

A phrase which included, daylight, natural light, windows, skylights,and views seen out a window were included in theme one and were given one point.

Table 4.5
Commentary on Work Surfaces Codes from Narratives in Stage Four

	Quote (N=77of 129)
1	Proper amount of space for computer work, designing and research.
2	I often work with architectural blueprints and need to have large surface area…separate work surfaces/desks also seems to work for me…Organization is key …I try to introduce storage items that are visually appealing but also have functional storage a versatility.
3	Work table behind the computer desk creates more flexibility…plenty of storage.
4	A large desk with lots of surface space.
5	A variety of work surface types/sizes/heights to accommodate the many different creative tasks involved in our work.
6	My mood can be negatively affected by a cluttered, disorganized heap of drawings, samples and files on my work surface. And to a lesser extent cluttered, disorganized heap of drawings, samples and files on my neighbour's work surface where I have direct visual connection.
7	My workstation is set up in an "L" shape to allow both my desktop and lap top computers to operate at the same time. The work surface is also large enough to allow laying out drawings for review etc.
8	Multi height work surfaces – for laying out projects – like the 42" counters.
9	A separate small mobile surface I find is awesome for working beside my desk and creating with others or discussing things as they come to meet with you at your desk – the surface is usually clean of other things (Physical distractions) and you can get right to the creative part. It also allows you to face out – not in – and be more open.
10	Ample work surfaces to be able to spread out all the paperwork for a project is absolutely necessary, versus creating stacks that create chaos and lost items.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 2: Work Surfaces – Positive Codes.

The investigator extracted 77 "Work surfaces" codes from the 129 narratives. These codes included the amount of work surfaces, organizational features, variation of heights, storage to allow for the performance of different tasks, and flexibility of the

work surfaces. Some examples of the sentences from which the phrases were extracted (see Table 4.5).

Table 4.6
Commentary on Personal Items Codes from Narratives in Stage Four

	Quote (N=70 of 129)
1	I have funny quotes, inspirational posters and the design drawings I did as a child hanging in my office. So, whenever I need a mental break, or wonder why I'm in this profession… I can get re-inspired.
2	Access to a flat wall for taping up concepts.
3	Music always adds to the creative quotient for me.
4	My "workstation" is actually a private office that I created. It is close to perfect because I have everything that I need – computer with large screen, copier, printer and scanner close at hand.
5	Having space to pin up inspirational images, magazine clippings, and napkin sketches can foster creativity.
6	I do like the fact that I have a PC and a MAC to work on.
7	Access to internet, magazines, portfolios, etc.
8	Having the ability to hang/display projects in progress is critical to my creative process
9	I am in a space with…interesting objects collected from all over the world.
10	Ability to access resources, magazines, samples, TV, music, in addition to my computer allows me to see into other worlds
11	I keep a case of coloured pencils on my desk -very inspiring.
12	Technology …tremendous factor on creativity.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 3: Personal Items – Positive Codes.

The investigator extracted 70 "personal items" codes from the 129 narratives. A phrase containing a single personal item and a phrase containing a group of items were both given a single point. Items that were identified as personal included technical devices,

music, drawing tools, reference materials, books, magazines, photos, artwork, items added to a tack board, items drawn on a whiteboard, and other unique items all of which are not usually included in design specifications for the office design but added by people using the space after the furniture and fixtures are installed. The codes identified in this theme were added by the occupant of the workstation and they felt these items enhanced their creativity (see Table 4.6).

One participant, a mobile worker, "I do not have ownership, and therefore cannot claim it (the workstation) for personalization beyond a limit." This was the only item mentioned in his/her narrative.

Theme 4: Privacy – Positive Codes.

The investigator extracted 50 "privacy" codes from the 129 narratives. In 15 cases both "privacy" and "collaboration" codes were presented together; one contradicting the other in terms of positive affect. The theme of "privacy" included the participant's desire for a quiet environment, ability to concentrate, spaces to get away from distractions, a place where they were not so visible to others, and a general sense of privacy (see Table 4.7).

Theme 5: Collaboration – Positive Codes.

The investigator extracted 44 "collaboration" codes from the 129 narratives. "Privacy" and "collaboration" codes were presented together in the narratives (see Table 4.8). The theme of "collaboration" included ability to see others, ability to hear others, ability to be involved in a conversation, and mention of extra seating for a guest. There were 29 participants that mentioned the positive affect of collaboration without stating a negative affect related to privacy.

Table 4.7
Commentary on Privacy Codes from Narratives in Stage Four

	Quote (N=50 of 129)
1	Private conversations with clients are held away from our workspace
2	Privacy. I am home alone in the best sense of the phrase. I can let my creativity flow without interruption, which is very important to me.
3	I am one of those people who likes to work in total silence when no one else is around…visual privacy.
4	For creative purposes, the ability to control my environment – noise level, my own choice of music, knowing that no one is watching over me – is important.
5	Things that help me be creative: The ability to tune out my surroundings, which allows me to be able to concentrate on a specific design problem.
6	My present workstation is fine for creativity when others are also busy. When there is too much talking, the distraction factor for creativity is not productive in which case I end up working after hours to find that peace.
7	I currently work in an open office which at times has it benefits for creativity but for me personally, I think best and am more creative when I am alone and have privacy.
8	Ability to control interruptions when working on creative activities.
9	I have a 6'- 6" x 8' corner (manufacturer placed here) workstation. If I'm doing something really intense, I'll come in on a Saturday and work when the office is empty.
10	My current workstation is very open, with very little privacy. The only benefit is the creativity that surrounds me, such as other designers and project managers.
11	Can work in any area that is designated, if I have to really work with no disturbance I will move to a closed room.
12	If planning and drawing on computer – all day, any time at somewhat typical workstation/desk is ok and can lead to creative plans if allowed to concentrate (no distractions). However, really designing and trying to be creative is away from my desk usually, or after hours (in or out of office), after emails and meetings are done etc…and if it is quieter. To capture this during the busy day, leaving desk to a quiet or comfy seating area away from 'work demands' definitely helps…there needs to be many of these spaces so you know you can move there asap and no waiting or disappointments that it is being used by others…with space to draw!

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Table 4.8
Commentary on Collaboration Codes from Narratives in Stage Four

	Quote (N=44 of 129)
1	I have a 2-3 person table adjacent to my desk for quick meetings…I have a door with direct view to my business partner's desk, so we can discuss projects while seated at our desks, and to quickly access each other.
2	Environment is very conducive to collaboration and creativity among the team…3 of us share a space…have trouble hearing phone calls over each other and /or concentrating on work while neighbors have visitors or phone calls.
3	Inspiration comes from exposure to new ideas and images. This means that I need to see and ear what is going on around me.
4	My current workspace is very open to other staff interaction, creates dynamic and transparent communication, but often takes away from creative focus and privacy is required.
5	I am generally positive about my workstation as it is open and I like to collaborate with other people and overhear what they are saying at work. I lead a team and part of my job is to work with junior and intermediate designers and critique their design work.
6	Close proximity…with other designers…enhances discussion and interaction of ideas which facilitates the creative process within the office.
7	Design is a collaborate process and interaction must be facilitated, but too much socializing is distracting.
8	Working alone – no distractions. However, one of the things I miss the most about working in a studio with multiple designers is the interfacing and bouncing ideas off another creative head…quite exhilarating. Still, there were enough drawbacks with noise and interruptions that I still would choose to work privately most of the time.
9	In our office we encourage interaction and collaboration so I like that it is easy for me to bounce ideas off of coworkers, stop by and see new products they may have on their desks and /or easily see what others are working on.
10	Being close to my co-workers is the key to my creativity.
11	Present workstation is open and allows impromptu meetings and conversations which are encouraging to creative process.
12	Creativity also derived from working within a multidisciplinary firm of architects, landscape architects, graphic designers and illustrators.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 6: Ergonomic Furniture – Positive Codes.

The investigator extracted 30 "ergonomic furniture" codes from the 129 narratives. This theme was developed from phrases with the words ergonomic or comfortable (see Table 4.9). There were 15 participants that mentioned an ergonomic and/or comfortable chair.

Table 4.9
Commentary on Ergonomic Furniture Codes from Narratives in Stage Four

	Quote (N=30 of 129)
1	The height adjustable workstation and flexible ergonomic chair help keep me moving and I feel better.
2	I found a comfortable chair and a footstool work the best for me.
3	Ergonomic design to ensure a physical healthy environment.
4	Comfortable environment including ergonomic chair.
5	It is vital to have a comfortable chair and keyboard placement on days that I am at my computer.
6	My chair is ergonomic and I look forward to time in my space.
7	I have a desk chair and a 'comfy' chair to clear my head.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 7: Multiple Work/Play Areas – Positive Codes.

The investigator extracted 28 "multiple work/play areas" codes from the 129 narratives. This theme included ability to use other spaces for work away from the workstation. Theses areas included lounge areas, open and closed meeting areas, design charrette spaces, or areas outside the office environment (see Table 4.10). Building locations and surrounding areas were mentioned that offered escape for the creative mind.

Table 4.10
Commentary on Multiple Work Areas Codes from Narratives in Stage Four

	Quote (N=28 of 129)
1	My office includes a lounge area with fun pillows and a stack of magazines (new and old) and a few memorabilia pieces.
2	Adjacent to my desk (about 10 feet away) is a Design Charrette space that has a large, standing height counter and a large pin up magnetic white board. I use my desk, this charrette space, and a private conference room throughout the day …our office is downtown so outdoor space is always active, fun and interesting.
3	I think having a "creative break space" that allows designers to refresh inspiration would be fun, stimulating and recharge the creative mind.
4	Although there are no lounge areas there are areas where the designers can congregate, share ideas and layout schemes.
5	I work in an environment where I do have an assigned station, but am given free will to work in many areas of our workspace, or outside the office when appropriate, which encourages creativity for me.
6	The three main things that help encourage my creativity at the office…changing locations – when I get restless sitting at my desk, I like to move to the sofa next to my desk, or go to a completely different room…sitting in the same chair for 8+ hours will make you go a little crazy:)
7	I do enjoy the fact that we have private conference areas and open conference areas also. This allows for the not so formal meetings to take place in a relaxed environment.
8	Having access to private rooms that seat 4 to 6 that have drymarker boards and tackable surfaces is critical, the option to reserve these spaces is even better.
9	Office is in a large creative hub of the city, atmosphere of patrons at local eateries at lunch add to the creativity of the workplace… recent addition of pool table for intermittent breaks by staff at their own leisure.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 8: Artificial Lighting – Positive Codes.

The investigator extracted 27 "artificial lighting" codes from the 129 narratives. This theme included the ability to adjust lighting levels (quantity of light), the quality of light (colour rendition of the lamps), emotional reaction to lighting, and a lighting

scheme that includes general, accent and task luminaires (see Table 4.11). Daylight and artificial light were referenced together by a few participants.

Table 4.11
Commentary on Artificial Lighting Codes from Narratives in Stage Four

	Quote (N=27 of 129)
1	I have natural light and the fluorescent fixtures have "Daylight" lamps in them, producing warm light.
2	Design office strengths: 1. Natural light with overhead task lighting, ambient lighting and two windows.
3	Good lighting/task/overall.
4	The ability to adjust lighting levels as required by tasks performed.
5	Lighting is designed for various needs from general to task to motivational.
6	I have fabulous light both natural and artificial.
7	The lighting is varied and therefore good.
8	I feel lighting schemes affect my mood…and my mood reflects how much effort I want to put into creativity.
9	Overhead lighting in a natural color rendition.
10	We also have separate material rooms where we can lay out large material samples and have the opportunity to see them in different lighting conditions.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 9: Nature – Positive Codes.

The investigator extracted 23 "nature" codes from the 129 narratives. This theme included plants in the office, nature seen through a window or skylight, and pets (see Table 4.12). An actual phenomenon of nature had to be presented in the phrase for the code to be placed into this theme. Phrases such as "outdoor views" did not qualify as a "nature" code and were therefore only placed into the "daylight and view" theme.

Narratives with phrases that combined outdoor vegetation or animals and that included a phrase with a window or view were allotted 2 codes, one for the "nature" theme and one for the "daylight and view" theme.

Table 4.12
Commentary on Nature Codes from Narratives in Stage Four

	Quote (N=23 of 129)
1	It…has a place for my 3 tiny furry babies to hang out with me.
2	I always keep orchids, fresh flowers or green plants in my space.
3	Has a doggie bed for my favorite pet who visits often.
4	I have a large window with a "landscape" view.
5	My last workstation…had…a view of mostly trees and bird (including hawks and falcons).
6	My pet dog. She is a wonderful distraction when I need a little 5 minute break.
7	After 8 years in an enclosed windowless office I now have a 12' long X 6' high window with a view of "grass and trees". (This sentence can also be found in Table 4.4. It is an example of a 2 code theme placement from one phrase in a sentence – grass and trees for theme 9 and window for theme 1.)
8	My present workstation encourages creativity through the inclusion of a window that overlooks a "pastoral setting", which happens to be a construction site, but still pastoral at this time.
9.	I have plants.
10.	My golden retriever in the office.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 10: Air Conditioning – Positive Codes.

The investigator extracted 14 "air conditioning" codes from the 129 narratives. This theme included physical human comfort factors related to air quality and temperature (see Table 4.13). The sentence quoted for number 5 had 2 codes extracted one for the "air conditioning" theme and one for the "décor" theme.

Table 4.13
Commentary on Air Conditioning Codes from Narratives in Stage Four

	Quote (N=14 of 129)
1	Comfortable heating and cooling.
2	Warm enough. Cool enough.
3	Comfort and space considerations vary from one individual to another, therefore the ability to adjust temperature.
4.	Comfortable atmosphere (AC and heating).
5.	My fortune is to be part of a beautiful showroom with all natural clay on the walls which gives the benefit of clean air, dust free as well as beautiful to look at and touch. Being creative is easy in this environment.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Table 4.14
Commentary on Décor Codes from Narratives in Stage Four

	Quote (N=14 of 129)
1	A beautiful aesthetics is important to my creativity because it is a background to support the work.
2	Very stylish environment.
3	It is beautifully appointed.
4	The mood is comfortable to me.
5	Natural wood makes me happy.
6	The spaciousness of my studio definitely encourages creativity…tall ceilings.
7	Space is of the utmost importance.
8	Office is large, spacious and warehouse like. High ceilings, wood floors, open-concept, with walls and surfaces covered in work in progress from multiple teams.

Note. The investigator assumed that all features or information presented in each narrative related to that individual's creativity unless they stated otherwise.

Theme 11: Décor – Positive Codes.

The investigator extracted 14 “décor” codes from the 129 narratives. This theme included comments made about the volume of space, aesthetics, or the mood created by a small portion of the office, or the total work environment (see Table 4.14). Most of the phrases collected for this theme were very abstract with little or no detail on the physical environment.

Theme 12: Colour – Positive Codes.

The investigator extracted 12 “colour” codes from the 129 narratives. This theme included comments made about surface finishes and the human reaction to colour in the office environment (see Table 4.15).

Table 4.15
Commentary on Colour Codes from Narratives in Stage Four

	Quote (N=12 of 129)
1	Fun colours and graphics.
2	The space is a tranquil color that changes throughout the day.
3	Color palette… (muted hues)
4	Color – the color of walls and the freedom to have a color I love is very important.
5	White/bright and neutral work surface (no wood tones to skew color)
6	Being able to play with the finishes and brightened up the space has allowed for a lot of creativity and helps me be creative.

Note. The investigator assumed that all features or information presented in each narrative related to that individual’s creativity unless they stated otherwise.

Overall Comments – Positive Codes Placed into Themes.

The commentary from the 129 participants, who completed the narrative at the end of the stage four survey, was substantial and reliably reflected the current (2012)

condition of the physical design office environment - in relation to worker creativity - for this sample group working in North America. The data collected from these 129 narratives in stage four reproduced results found in stage one and stage two indicating a successful triangulation of data in this research project (see Table 4.2). The investigator's interpretation of the narrative data was minimal as the commentary from the participants presented in Tables 4.4 to 4.15 was clear.

Results Analysis of Survey Questions – Stage Four.

A total of 259, the majority IDC and ASID members started the final survey and of these individuals 213 answered all 71 questions for a completion rate of 82.2%. This meant that 46 participants contributed data to some, but not all, of the questions as this option was given to them. All 259 participants clicked the done button at the end of the survey. The investigator did receive an email from one participant who could not select anything but neutral for the very positive to very negative choice questions. The "Survey Monkey" technician was contacted and informed the researcher that the survey was working fine and that the individual experiencing problems may have had an outdated computer or not have enabled javascripting and this information was emailed to this participant by the investigator. This may explain why some participants did not answer all the questions. The results showed the total number of participants that answered a question and the response count; the number of participants that selected a specific answer. Participants were able to select more than one answer for the multiple choice questions. When this occurred the two variables reported for a question were not the same and therefore a response count may be higher than the number of participants answering the question.

There were 166 ASID members and 55 IDC members that identified themselves in this survey which included 177 Interior Designers and 26 individuals who were both Interior Designers and Interior Design Educators. There were 20 others, 2 students, 5 intern members, 6 Architects, an Architectural cost estimator, a Dynamic space specialist, a Facilities manager, a person with LEED, AD, (ID and C) , an Allied member residential planner, a Professional ASID marketing and sales person, and a person with CID (ASID and IIDA).

The survey design questions were divided into 5 parts. The definitions of "creativity" and "workstation" were placed at the beginning of the survey to ensure consistency of each participant's perspective when answering the survey questions (see Appendix A, survey introduction). The data collected was cross-tabulated with question 66 that asked the participants if they were female or male and question 67 that asked the participants the generation of worker they were. Any significant variations to the data for these demographics were noted in the appropriate area. The data produced by participants that worked in a commercial building and not at home was also separated and reviewed to report significant findings in the survey results. The question numbers continued consecutively through the six parts of the survey.

Part 1, with 5 questions, was used to collect information on the workstations that the participants currently occupied. If a participant had the ability to use a variety of workstations or work areas they were requested to select the one that was the most conducive to their creative thought process when completing part 1 of the survey (see Appendix B, survey part 1).

Question 1 received 245 responses, 62% (N=152) participants had a designated workstation in an office environment, 33.5% (N=82) had an office in their home which was their primary workplace, and 5.7% (N=14) had a non designated workstation in an office environment where they preferred to work. Eighteen participants specified other work circumstances. The statements from some of these individuals: “I mostly work directly in my clients’ homes”, “I have an office at my place and at work.”, “I have a private office.”, “I also have other work areas where I can meet with others and/or spread out materials.”, “I have an outbuilding on my farm which is my primary workplace. It used to be a creamery.”, “Shared desk in an open area”, “Multiple work surfaces in an art-loft-factory studio space.”, “I use a laptop when on site.”, “However I often work at the boardroom or drafting table.”, “ I am a mature student so I have a functioning home office as well as school workstations.”, “Non designated workstation in an non office environment.”, “ I am mobile, so work wherever I am that day.”, and “I have 2 designated office workstations and one home workstation.” Females, males, and the four generations were represented under each category of this question (see Appendix H, cross- tabulation of question 1 with questions 66 and 67).

Question 2 received 246 responses, 39.4% (N=97) of the participants had a private office, 33.7% (N=83) had workstations with no panels, 14.6% (N=36) had workstations with panels or dividers over 4’- 0” from the floor that provided some visual privacy, and 14.2% (N=35) had an open workstation with low panels/dividers that are less than 4’-0” from the floor. Eighteen participants specified other configurations. Some of the statements from some of these individuals: “Typical desk

with privacy panels, but no workstation panels.", "I share my office with my bookkeeper.", "Use demountable wall system , floor to ceiling, glass barn door.", "I have a portion of the lower level of our home set aside for my studio.", "My desk is placed against a wall (drywall) and on either side are tall 36" wide cabinets providing some privacy.", "I have an office in my home that does not need to be closed off.", and "My office has full height dividers but with no doors. Higher panels, walls and doors do add to privacy. Lower or no panels allow for more collaboration." The cross-tabulation revealed that 61.5% (N=8) of workers with non designated workstations had open workstations with no panels compared to 31.8% (N= 47) of workers with designated workstations. Females and males were represented for all categories, and 41.6% (N=61) of females had closed offices compared to 34.8% (N=8) of males (see Appendix I, cross-tabulation of question 2 with questions 1 and 66).

Question 3 received 254 responses, 41.3% (N=105) of the participants did not see anyone seated at another workstation while sitting at their workstation/desk, 31.9% (N=81) could see 1 to 2 people, 17.3 % (N= 44) could see 3 to 6 people, 5.9% (N=15) could see 7 to 10 people, and 4.3% (N=11) could see more than 10 people. A cross-tabulation revealed that only 27.0% (N= 41) of participants with a designated space and 15.4% (N=2) with a non designated space in a commercial office environment could not see anyone seated at another workstation while seated at their desk. The high percentage of participants that do not see anyone when seated at their desk can be contributed to the 69.2% (N=54) of the participants that had home offices (see Appendix J, cross-tabulation of question 3 with question 1).

Question 4 received 254 responses, 41.3% (N=105) of the participants had a workstation or personal space larger than 64 square feet, 23.6% (N=60) had 49 to 64 square feet, 23.6% (N=60) had 36 to 48 square feet and, 12.6% (N=32) had less than 36 square feet. A cross tabulation revealed that only 37.3% (N=56) of designated workstations in a commercial office environment are over 64 square feet and 42.9% (N=6) of non designated workstations are less than 36 square feet. Further investigation revealed that 51.3% (N= 40) of participants with home offices had workspaces of over 64 square feet which contributed to the high percentage overall. Only 16.7% (N=6) Generation Y participants had a workstation over 64 square feet compared to Traditionalists, Boomers, and Generation X's at 44.4% (N= 4), 55.7% (N=64) and 33.9% (N=19) respectively (see Appendix K, cross-tabulation of question 4 with questions 1 and 67).

Question 5 received 252 responses, 47.2%, (N=119) of the participants were consulted and/or participated in the design of their workstation to ensure that it met their needs, 25% (N=63) were not consulted but the workstation met their needs, 14.7% (N=37) were not consulted and the design did not meet their needs, 14.3% (N=36) were given a standard workstation that were adjusted to meet their needs. It was understandable that 77.6% (N= 9) of participants with home offices had participated in the design of their workstations. Each generation had participants who had not been consulted on the design of their workstation (see Appendix L, cross-tabulation of question 5 with questions 1 and 67).

Part 2 with 37 questions, was used to collect information on the physical elements of all the workstations/workspaces that each participant had occupied based on the data of all the codes - both positive and negative - pulled from the narratives in stage two of this research study (see Appendix C, survey part 2).

Question 6 received 231 responses, 33.8% (N=78) of the participants had occupied 2 to 3 workstations, for a considerable amount of time, over the course of their design career, 32.9 % (N=76) had occupied more than 5 workstations, 23.4% (N=54) occupied 4 to 5 workstations, and 11.3% (N=26) only occupied 1 workstation. This data indicated that there was a reliable level of workstation occupation experience from this sample group applied to answering the survey questions validating the results documented.

Questions 7 to 42 referred to codes pulled by 2 participants in stage two from the stage one narratives (see Table 4.16). A modified 5 point likert scale format was employed (see definitions). The ranking options included, very positive, positive, neutral, negative and very negative. The positive/negative format was a direct extension of the themes developed in stage two. The investigator assumed that the ratings from very positive to very negative were at equal intervals. The participants were allowed to pull from past experiences in all the workstations they had occupied. “Not Applicable” was available as a choice for each question and participants were to select this option if they had not been exposed to the variable in the question. The data collected from the survey questions in part 2 supported the ranking of the themes extracted from the narratives by the investigator in stage four (refer to Table 4.2).

Table 4.16
Statistics for Positive Codes Extracted from Part 2 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
7 (231)	Ergonomic chair	57.6% (133)	25.5% (59)	7.8% (18)	3.9% (9)	1.3% (3)	3.9% (9)	1.60
8 (230)	Mobile pedestal with seat	19.1% (44)	23.5% (54)	20.4% (47)	3.5% (8)	0.9% (2)	32.6% (75)	2.16
9 (227)	Lounge chair	10.6% (24)	11.9% (27)	21.6% (49)	6.6% (15)	4.0% (9)	45.4% (103)	2.66
10 (231)	Adjustable work surface heights	19.9% (46)	20.3% (47)	16.9% (39)	3.9% (9)	2.2% (5)	36.8% (85)	2.17
11 (230)	Multiple computer monitors	24.8% (57)	21.3% (49)	19.6% (45)	3.5% (8)	0.9% (2)	30.0% (69)	2.06
12 (223)	Amount of work surface	61.4% (137)	25.1% (56)	7.2% (16)	3.1% (7)	1.8% (4)	1.3% (3)	1.56
13 (230)	Eating & drinking at workstation	31.3% (72)	35.2% (81)	18.7% (43)	10.0% (23)	1.3% (3)	3.5% (8)	2.11
14 (230)	Posting surfaces	33% (76)	33.5% (77)	14.3% (33)	5.7% (13)	1.7% (4)	11.7% (27)	1.97
15 (231)	Heating & cooling adjustments	32.9% (76)	28.1% (65)	6.9% (16)	7.4% (17)	6.9% (16)	17.7% (41)	2.11
16 (229)	Fresh, clean air	49.8% (114)	26.2% (60)	8.7% (20)	4.4% (10)	3.5% (8)	7.4% (17)	1.76
17 (227)	Computer set up	58.1% (132)	26.9% (61)	8.4% (19)	3.5% (8)	2.2% (5)	0.9% (2)	1.63
18 (228)	Ample storage	46.9% (107)	35.1% (80)	10.1% (23)	3.9% (9)	3.1% (7)	0.9% (2)	1.80
19 (228)	Privacy achieved with panels or walls	25% (57)	22.4% (51)	18.0% (41)	10.1% (23)	5.7% (13)	18.9% (43)	2.37
20 (231)	Shared work surface	14.9% (34)	30.3% (69)	21.1% (48)	7.5% (17)	3.1% (7)	23.2% (53)	2.35
21 (231)	Layered surfaces	16.9% (39)	35.5% (82)	18.2% (42)	5.6% (13)	2.2% (5)	21.6% (50)	2.24
22 (229)	A private office	30.1% (69)	17.0% (39)	16.2% (37)	7.4% (17)	3.1% (7)	26.2% (60)	2.13

Table 4.16 (Continued)
Statistics for Positive Codes Extracted from Part 2 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
23 (229)	Music over a speaker system	8.3% (19)	17.0% (39)	19.2% (44)	16.6 % (38)	14.0% (32)	24.9% (57)	3.14
24 (231)	Personal Music	22.5% (52)	31.2% (72)	21.2% (49)	8.2% (19)	2.6% (6)	14.3% (33)	2.26
25 (229)	Seeing other people	9.6% (22)	40.2% (92)	30.1% (69)	9.2% (21)	1.3% (3)	9.6% (22)	2.47
26 (228)	Others see you	8.3% (19)	28.1% (64)	37.7% (86)	11.8% (27)	4.4% (10)	9.6% (22)	2.73
27 (226)	Hear conversations	5.8% (13)	15.9% (36)	27.0% (61)	26.1% (59)	18.1% (41)	7.1% (16)	3.37
28 (230)	Others hear your conversations	4.8% (11)	10.9% (25)	26.5% (61)	30.0% (69)	20.4% (47)	7.4% (17)	3.54
29 (229)	Ability to hear phone conversations	4.4% (10)	8.3% (19)	24.0% (55)	32.3% (74)	24.0% (55)	7.0% (16)	3.68
30 (229)	Others hear your phone conversation	3.1% (7)	7.4% (17)	21.8% (50)	34.1% (78)	26.6% (61)	7.0% (16)	3.79
31 (230)	Vertical drawing surfaces	12.2% (28)	34.3% (79)	22.2% (51)	3.5% (8)	2.2% (5)	25.7% (59)	2.31
32 (230)	Ability to personalize space	30.9% (71)	47.4% (109)	14.8% (34)	2.6% (6)	1.3% (3)	3.0% (7)	1.92
33 (229)	Plant at workstation	22.7% (52)	23.1% (53)	24.9% (57)	5.2% (12)	3.1% (7)	21.0% (48)	2.27
34 (227)	Landscape photos	9.3% (21)	19.4% (44)	37.4% (85)	4.8% (11)	2.6% (6)	26.4% (60)	2.62
35 (229)	Photos of family or friends	25.8% (59)	41.5% (95)	21.8% (50)	3.5% (8)	1.3% (3)	6.1% (14)	2.07
36 (226)	Pet(s) at workstation	13.7% (31)	12.8% (29)	14.6% (33)	13.3% (30)	11.1% (25)	34.5% (78)	2.92
37 (226)	Flexible workstation	30.5% (69)	42.5% (96)	11.1% (25)	5.3% (12)	1.8% (4)	8.8% (20)	1.96
38 (226)	Window with view of urban horizon	31.0% (70)	30.5% (69)	16.8% (38)	3.5% (8)	2.7% (6)	15.5% (35)	2.01

Table 4.16 (Continued)
Statistics for Positive Codes Extracted from Part 2 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
39 (228)	Window with view to natural horizon	49.6% (113)	24.1% (55)	8.8% (20)	1.8% (4)	1.8% (4)	14.0% (32)	1.64
40 (227)	View to interior horizon	11.9% (27)	30.0% (68)	33.5% (76)	8.4% (19)	1.3% (3)	15.0% (34)	2.49
41 (229)	Ability to open a window	33.6% (77)	21.4% (49)	14.4% (33)	3.5% (8)	2.6% (6)	24.5% (56)	1.94
42 (226)	Visual access to unique interior views	11.9% (27)	32.3% (73)	21.7% (49)	5.3% (12)	1.3% (3)	27.4% (62)	2.33

Note. Very positive were designated a "1" and numbers increase to "5" for very negative. Investigator assumed that the ratings from very positive to very negative were at equal intervals. The lower means indentified the most positive codes.

Theme 1, "Daylight and view", which included windows, presented in questions 38, 39, and 41, received means of 2.01, 1.64, and 1.94 respectively. These results represented a very positive reaction by participants. Related, question 16 on fresh clean air received a positive mean of 1.76. Question 16, on fresh clean air was developed from a negative code from stage two to test the first place result for air quality and ventilation from the government survey (see Figure 2.4). The stage four survey results verified the previous high ranking acquired through the government survey although other codes in part 2 of this survey received higher results.

Theme 2, "Work surfaces", presented in question 12, received the highest rating of all the codes presented in part 2 of the survey with a mean of 1.56, supported by results of questions 18 and 37 with a means of 1.80 and 1.96 respectively. These supporting codes included storage and workstation flexibility. The high placement of work surfaces related to the creative process indicated that the participants connected

creativity with the act of completing work which was implied in the definition of creativity presented at the start of the survey.

Theme 3, “Personal items”, presented most clearly in question 32, received a high rating with a mean of 1.92. Related questions 11, 14, 17, 24, 31, 33, and 35 also received positive ratings of 2.06, 1.97, 1.63, 2.26, 2.31, 2.27 and 2.07 respectfully. These codes were comprised of multiple computer monitors, posting surfaces, computer set up, personal music, vertical drawing surfaces, plant at a workstation, and photos of family or friends.

Overall the top 3 themes developed from the narratives in stage four were validated by the survey questions in stage four which indicated consistency of the data produced through the survey design.

Negative results, from part 2 of the survey, were found in 5 codes: one, “music over a speaker system” presented in question 23 with a mean of 3.14, two, “hear conversations”, presented in question 27 with a mean of 3.55, three, “others overhear your conversations”, presented in question 28 with a mean 3.54, four, “ability to hear phone conversations, presented in question 29 with a mean of 3.68, and five, “others hear your phone conversations”, presented in question 30 with a mean of 3.79. All of these codes occur in open office designs which are gaining popularity with their claims of increasing collaboration between office workers which is seen as a positive feature that supports creativity in the workplace.

Part 3, of the survey, with 20 questions, was used to collect information on the physical properties of the overall office environments that participants had occupied.

(see Appendix D, survey part 3) The question numbers continued consecutively through the survey. The results showed positive means for all the codes supporting the positive codes pulled from the narratives from stage one (see Table 4.17).

Table 4.17
Statistics for Positive Codes Extracted from Part 3 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
43 (214)	Neutral finishes & materials	13.6% (29)	29.0% (62)	36.4% (78)	16.4% (35)	2.3% (5)	2.3% (5)	2.64
44 (215)	Colours & textures	20.0% (43)	49.8% (107)	14.9% (32)	9.3% (20)	1.9% (4)	4.2% (9)	2.19
45 (215)	Illumination levels	55.8% (120)	33.5% (72)	6.5% (14)	3.3% (7)	0.5% (1)	0.5% (1)	1.58
46 (216)	Accent, task & general lighting scheme	59.7% (129)	29.2% (63)	6.0% (13)	2.3% (5)	0.9% (2)	1.9% (4)	1.52
47 (215)	Access to photocopy area	24.7% (53)	36.7% (79)	26.0% (56)	7.9% (17)	2.8% (6)	1.9% (4)	2.26
48 (214)	Adjacency to a coffee area	10.7% (23)	24.8% (53)	40.2% (86)	12.1% (26)	3.7% (8)	8.4% (18)	2.70
49 (214)	Access to a closed meeting room	21.0% (45)	42.1% (90)	22.0% (47)	2.3% (5)	1.4% (3)	11.2% (24)	2.11
50 (213)	Private closed room	16.0% (34)	30.5% (65)	23.0% (49)	5.6% (12)	1.4% (3)	23.5% (50)	2.29
51 (216)	Private room for phone calls	23.6% (51)	36.6% (79)	16.7% (36)	3.2% (7)	1.4% (3)	18.5% (40)	2.04
52 (215)	Access to outdoor seating	28.4% (61)	32.2% (80)	11.6% (25)	1.4% (3)	1.9% (4)	19.5% (42)	1.89
53 (212)	Outdoor walking paths	26.4% (56)	34.9% (74)	13.2% (28)	1.4% (3)	2.4% (5)	21.7% (46)	1.95
54 (214)	Small rooms with lounge furniture	16.4% (35)	28.0% (60)	21.0% (45)	5.1% (11)	0.5% (1)	29.0% (62)	2.23
55 (215)	Access to a variety of spaces to work	26.0% (56)	40.0% (86)	12.1% (26)	2.8% (6)	0.5% (1)	18.6% (40)	1.91

Table 4.17 (Continued)
Statistics for Positive Codes Extracted from Part 3 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
56 (215)	Shared standing height work surfaces	13.5% (29)	29.3% (63)	21.4% (46)	6.0% (13)	0.9% (2)	28.8% (62)	2.32
57 (216)	Sound masking	20.8% (45)	21.3% (46)	17.6% (38)	3.2% (7)	2.8% (6)	34.3% (74)	2.17
58 (215)	Skylight	28.8% (62)	27.4% (59)	6.0% (13)	2.3% (5)	0.9% (2)	34.4% (74)	1.76
59 (215)	View of sky	17.7% (38)	21.4% (46)	17.2% (37)	1.9% (4)	1.4% (3)	40.5% (87)	2.12
60 (214)	Daylight through a window	74.3% (159)	18.7% (40)	1.9% (4)	1.4% (3)	0.5% (1)	3.3% (7)	1.29
61 (213)	Visual access to team members	23.9% (51)	46.9% (100)	18.3% (39)	2.8% (6)	0.0% (0)	8.0% (17)	2.00
62 (214)	Visual access to non team members	5.6% (12)	18.2% (39)	43.5% (93)	16.4% (35)	1.4% (3)	15.0% (32)	2.88

Note. Very positive were designated a “1” and numbers increase to “5” for very negative. Investigator assumed that the ratings from very positive to very negative were at equal intervals. The lower means indentified the most positive codes.

Questions 43 to 62 in part 3 again referred to codes pulled from the stage one narratives in stage two by 2 participants. The same modified 5 point likert scale format was employed as in part 2. The participants, as in part 2, were allowed to pull from past experiences in workstations that were part of an office or home environment that they had occupied for a considerable period of time. They were asked to consider how their present and past workstations were situated in the building when answering the questions.

“Daylight through a window”, presented in question 60, was clearly ranked number one with a mean of 1.29 which supported previous rankings in this study.

"Office lighting scheme", presented in questions 45 and 46 with means of 1.58 and 1.52 respectively, secured a second place ranking which was not reflected in the data previously collected in stage one and stage two, or in the narratives from stage four. Artificial lighting was mentioned by 2 participants in stage one narratives and both were referenced in the negative theme as ID4 was disrupted by "automatic light sensors that kept going off " while he/she worked and ID12 was not satisfied with the colour rendition of "the cool white fluorescent lamps".

The two codes of "access to outdoor" and "with natural settings" presented in questions 52 and 53 with means of 1.89 and 1.95 respectively shared third place with "access to a variety of spaces" away from your workstation that allow a change in work environment" presented in question 55 with a mean of 1.91.

Overall, all the codes in part 3 of the survey received positive ratings from the majority of the participants, although the rating for "visual access to non team members" presented in question 62 was close to neutral with a mean of 2.88.

Part 4, of the survey, with 5 questions, collected information on demographics (see Appendix E, survey part 4). As previously mentioned a total of 259 participants, the majority IDC and ASID members started the final survey and of these individuals 213 answered all 71 questions for a completion rate of 82.2%. The distribution of participation included 2 Canadian provinces and 37 American states. Ontario had the highest response rate with 54 participants, 25% of the 216 individuals that completed question 65. California came second with 23 responses for a rate of 10.6%. Of the 217 respondents to question 66, 195 (89.9%) were female and 23 (10.6%) were male.

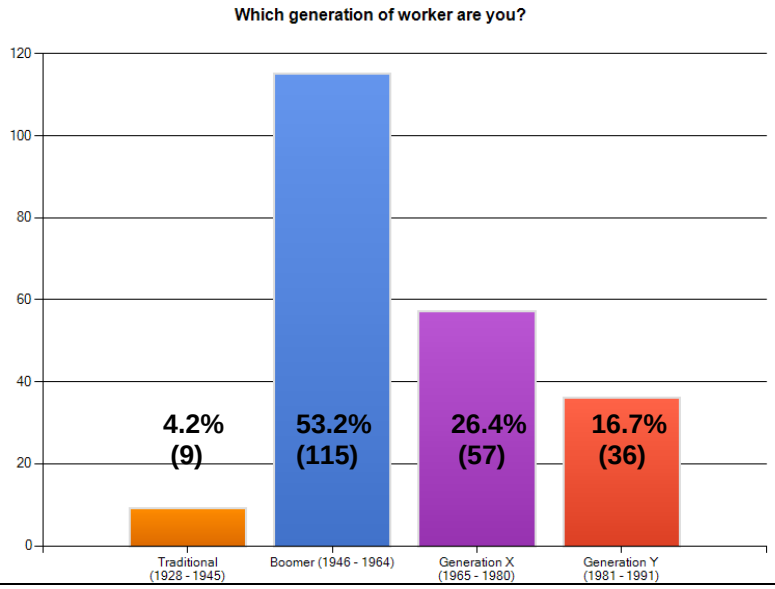


Figure 4.14 Demographics – Generations of Participants
Bar graph illustrates generation designation distribution of the 217 participants that completed question 67 in the stage four survey.
By Author using Survey Monkey, 2012

In the sample group for this study there was representation from four generations, Traditional (1928 -1945), Boomer (1946 – 1964), Generation X (1965 - 1980) and Generation Y, (1981 -1991) as illustrated in Figure 4.14. Cross-tabulating showed males and females in each category (see Appendix M, cross-tabulating of question 66 with question 67).

Part 5, of the survey, returned the participant to their present workstation and asked them to rate overall experiences related to the space (see Appendix F, survey part 5). All 4 questions were again styled in a modified 5 point likert scale format with the ranking options of very positive, positive, neutral, negative and very negative. There was again an option to check off “Not Applicable” if the participant had not been exposed to the variable in question. The results of part 5 are presented in Table 4.18.

Questions 68, 69, and 70, rating the workstation, had means on the positive side of the spectrum with the majority of the participants, 67.6%, 66.8%, and 64% respectively. This group of participants, within the sample group, perceived that their workstations contributed to their creativity and welling being. The results of these 3 questions identified that the majority of the sample group had exposure to positive features that could be rated by them to produce data of value on the phenomenon of creativity at the workplace for this study. Although there was a majority of positive responses the average is still low and combined with the neutral and negative responses to these questions the results identified the need for improvement of existing physical environments to encourage creativity of the users of workstations in a commercial or home office.

Cross-tabulation of question 68, rating the relationship of privacy to encouraging creativity, showed that only 47.3% (N = 17) Generation Y participants had rated their workstation positive for privacy compared to Traditionalists, Boomers and Generation X's at 88.9% (N = 8), 75.5% (N = 86) and 63.2% (N = 36) respectively (see Appendix M, cross-tabulation of question 68 with question 67). There was a probability that this data correlated to a type of hierarchy - position and experience - of space allocation that existed in the office although this could not be verified. A second cross-tabulation indicated that designers with a home office that was their primary workplace were much more satisfied with privacy in relationship to creativity than those in a commercial office environment (see Appendix N, cross-tabulation of question 68 with question 1). Participants with home offices gave positive response rates totaling 86.4% (N = 57). Participants that had a designated workstation in an office environment had a

lower positive response rate of 60.1% (N = 77). Participants that had a non designated workstation had an even lower positive response rate of 41.6% (N =5). The investigator could not include the18 participants that specified other for their office circumstances due to limitations of the online survey system. The third cross-tabulation indicated that males, 73.9% (N = 23) were slightly more positive about their privacy levels compared to women, 66.8% (N = 194) but the reason for this cannot be identified (see Appendix N, cross-tabulation of question 68 with question 66).

Cross-tabulation of question 69, rating the workstation design for giving a feeling of well being, showed positive results from all the generations. The Traditionalists were the most positive and 44.4% (N = 4) of them selected "very positive" for this question. Overall the Traditionalists were 77.7% (N = 7) positive and had no responses that were negative. The Boomers' positive ratings were 75.7% (N = 87) with 38.3% (N = 44) that selected "very positive", followed by Generation X with 59.7% (N = 34), and then Generation Y with 50.0% (N = 18) (see Appendix O, cross-tabulation of question 69 with question 67). The participants with home offices, when isolated through cross- tabulation, produced a rating of 78.8% (N = 52) which made a major contribution to the overall high rating. Participants with designated workstations produced a positive rating of 63.6% (N = 82) followed by participants with non designated workstations with a positive rating of 50.0% (N = 6). The feeling of ownership may have affected these ratings (see Appendix O, cross-tabulation of question 69 with question 1). The third cross-verification indicated that 78.3% of males, (N = 18) were more positive about their feelings of well being in their workstations

compared to women at 65.6% (N = 128) but the reason for this cannot be identified by this study (see Appendix P, cross-tabulation of question 69 with question 66).

Cross-tabulation of question 70, rating the design, size, and location of the participants' present offices were mostly positive. Again the Traditionalists were the most positive with 44.4% (N = 4) who had selected "very positive". Overall the Traditionalists were 66.6% (N = 6) positive and had no responses that were negative. The Boomers' positive rates were high with 70.5% (N = 81), followed by Generation X with 59.7% (N = 34), and then Generation Y with 52.8% (N = 19) (see Appendix P, cross-tabulation of question 70 with question 67). Again participants with home offices were the most positive and produced a rating of 77.3% (N = 51) compared to the participants with the designated workstations with a positive rating of 60.5% (N = 78). The majority of the participants with the non designated office were not positive and only 41.6% were positive (N = 5) (see Appendix Q, cross-tabulation of question 70 with question 1). Females and males rated evenly for this question.

Question 71, rating the total work environment with multiple work areas, received the highest mean which indicates that almost all members of this sample group who were exposed to these multi-workplace environments found the experience positive (see Table 4.18). There were a high number of participants (N = 43) who selected N/A and 18 or 19 that did not answer the question as directed, which indicated that many participants had not been exposed to multiple work areas.

Cross-tabulation of question 71, rating the total work environment with multiple work areas showed that the Traditional generation was again the most positive with 50% (N = 4) of them selecting "very positive". What was interesting is that

Generation X and Generation Y had the most positive reaction to this question compared to previous questions in part 5 of the survey (see Appendix Q, cross-tabulation of question 71 with question 67).

Table 4.18
Statistics for Positive Codes Extracted from Part 5 of Survey in Stage Four

Question (N)	Code	1 - Very Positive	2 - Positive	3 - Neutral	4 - Negative	5 - Very Negative	N/A	Mean
68. Rate your overall experience with the amount of privacy you have while sitting at you present workstation, during a typical day, in terms of encouraging your creativity.								
(216)		31.0% (67)	36.6% (79)	15.3% (33)	13.0% (28)	3.2% (7)	0.9% (2)	2.20
69. Rate your overall experience with the overall design, size and location of you present workstation, in the office, for giving you a feeling of well being.								
(217)		29.0% (63)	37.8% (82)	21.7% (47)	8.8% (19)	1.8% (4)	0.9% (2)	2.15
70. Rate your overall experience with the design, size and location of your present workstation, in the office, for encouraging your creativity.								
(217)		24.4% (53)	39.6% (86)	21.7% (47)	11.5% (25)	1.8% (4)	0.9% (2)	2.26
71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity.								
(198)		28.3% (56)	38.4 % (76)	8.1% (16)	3.0% (6)	0.5% (1)	21.7% (43)	1.83

Note. Very positive were designated a "1" and numbers increase to "5" for very negative. Investigator assumed that the ratings from very positive to very negative were at equal intervals. The lower means indentified the most positive ratings.

The final results showed Traditionalists were 87.5% (N = 7) positive and had no negative responses, the Boomers were 68.3% (N = 73) positive, followed by Generation X with 64.7% (N = 33), and then Generation Y with 62.6% (N = 20). Thirty-eight participants with home offices answered this question as their home environment must

have offered multiple work areas with a positive rating of 63.3% (N = 38). Participants with designated workstations in the office came in higher at 68.9% (N = 80). Participants with non designated workstations had a positive majority with 58.3% (N = 7), (see Appendix R, cross-tabulation of question 71 with question 1). Males had the most positive responses to this question with 84.2% (N = 16) and no negative responses. Females were less positive with 65.0% (N =117) positive responses, 8.3% (N = 15) neutral responses and 3.9% (N= 7) negative responses (see Appendix R, cross-tabulation of question 71 with question 66).

Cross-tabulation of Survey Questions – Stage Four.

All data used for cross- tabulating questions from the survey can be found in the Appendix (see Appendix H to Appendix Y, cross- tabulated survey questions). This information was produced using the features available on “Survey Monkey”.

Overall the most significant data was found by cross-tabulating question 5 with questions 4, 7, 12, 17, 32, 37, 39, 44, 45, 46, 68, 69, 70, and 71 which consistently showed that the degree of which an individual participated in the design of their workstation affected the percentages of positive responses in each category presented. Individuals that were consulted or participated in the design of their workstation produced the highest percentages compared to individuals that were not consulted who produced the lowest averages (see Appendix S to Appendix Y). This information is evidence that the individuals that participated in the design of their workstation perceived their workstations to have higher rates of encouraging their creativity than individuals that had not been consulted of the design of their workstation.

Chapter 5

Conclusion

Creativity is the spark, but it is the opportunity to do work that leads to innovation and this necessitates the physical workplace (Author, 2012).

People can be creative anywhere. Humans have the ability to adapt to any environment, but would it not be more beneficial to design workspaces that accommodate the creative needs of each individual; a custom fit to benefit the whole? This study has set the ground work for the development of an instrument of measure that can accurately determine the physical needs of an individual that will maximize their creativity to allow for their successfully integration into an organization's physical environment.

The first goal of this study was to establish a list, in order of importance, of physical elements and properties of the workstation and its immediate surroundings that this sample group, the majority IDC and ASID members, perceived to encourage their creativity. An exploratory mixed method of social science qualitative and quantitative research was employed that applied methodological triangulation validating the data through cross verification of the phenomena of office workers' perceived creativity related to the physical environment to establish this list.

The second goal of this research was to add to the evidence based design portfolio available to designers and organizational managers who are responsible for making design decisions that affect office workers at their workstations in the built

environment; workers who produce creative ideas that can transform into innovative products that contribute to the health of an organization.

This four stage study identified physical codes, which participants perceived encouraged their creativity in their workstations and the total workplace, through the narrative process. Each individual participant's narrative response was unique but the similarities between the individuals of this sample group were documented. In stage one, 12 participants wrote narratives on how their workstations encouraged their creativity. These 12 participants also introduced the total work environment into the research design equation. Codes were pulled from these narratives by 2 participants in stage two and placed into themes with emphasis on positive and negative codes. All the codes pulled were incorporated into the survey with 71 questions in stages three and four. The codes were ranked by the participants in part 2 and part 3 of the survey in stage four. These codes were then placed in order of their ranking to produce a list of items that were perceived to encourage creativity in the workplace.

The participants, in stage four, had the option to complete a narrative on how their workstation encouraged their creativity and codes were pulled by the investigator to produce themes that were ranked by the number of times a code was mentioned (see Table 4.3). The codes in the survey narratives duplicated the codes from stage two which verified a positive triangulation of the data. The data from the narratives was documented separately and alone these writings were valuable; a reliable source of information. The themes produced from the survey narratives were not applied to the final list ranking the items that encouraged creativity in the workplace but they were referenced. The data from stage one and two was isolated and tested separately with the

71 questions in the survey which facilitated a logical progression to the research design. The production of the themes from the survey narratives did identify one major issue that needs to be addressed in the future which is how to integrate workstations and manipulate the total workspace to provide both private and collaborative workstations according to the needs of the individual. Some participants embraced the open workstations and others found them very distracting when it came to creative work. A general sense of community facilitated by open workstations was reported in this study as a positive feature but was countered by comments on the inability to focus due to noise levels. A solution must be found that allows an office worker to conveniently isolate themselves when they need privacy. Most participants in home offices and those that had closed offices in the organizational setting expressed their satisfaction with the amount of privacy they had in their environment that allowed them to be very productive. The solution to this problem is yet to be determined. Stegmeier (2008), a workplace change management consultant stated,

> As the organization morphs and adapts to changes based on the dichotomies (of innovation versus performance maximization), ideally, the design professional will have developed a physical workplace solution that can respond to the shifting requirements of the end-users at any moment in time. The need for maximum flexibility, mobility, and adaptability will not decrease anytime in the near future (p. 86).

Stegmeier's (2008) goal when investigating the office environment was "to gain knowledge that could be applied to the design of physical workplaces centered on

improving collaborative behaviour for the purpose of increasing organizational results" (p.79).

List of Items that Encourage Creativity in the Workplace

The exploratory research design employed for this study allowed the voices of many individuals to be heard through the narrative process. This study clearly presented the diversity and similarities in work styles and the physical preferences among the participants that support their creativity. Each code in the narratives was recorded, verified, and given equal weight towards the completion of this list. The development of a checklist of physical attributes that contribute to an individual's creativity can assist designers by directing them towards the best solutions for incorporation people into the physical office environment. The sample group of participants for this research project determined the order in which these physical features were positioned on this checklist. The investigator was responsible for designing the research project and facilitating the four stages to accomplish this goal. This list may not reflect the views of each participant, but it is a product of a collaborative effort that identified the perceptions of the majority and should be used only as a discussion platform towards the development of an instrument of measure that can be used to identify the creative needs of the individual in the workplace (see Appendix Z, list of items that encourage creativity in the workplace).

The 35 items on the list were placed in order of ranking with item 1 ranked as first. Figure 5.1, illustrating an example of a total work environment was used for discussion of the items on the list. The mean average was presented for each item. This

mean average was transferred from Tables 16 & 17. Themes referenced were applied from Table 4.3.

Figure 5.1 The Total Work Environment.
Designated workstations in background and area for collaboration in foreground presented in this advertisement from POI Business Interiors, (Canadian Facility Management & Design magazine, February, 2012).

Item 1 – Daylight through a window, with a mean of 1.29, was also the most referenced feature in the narratives in stage four. Item 1 contributed to the highest ranked theme of "Daylight and view". Figure 5.1 shows how a high ceiling, floor to ceiling windows, clerestory windows in full height divider walls, and open workstations allow the daylight to fill the volume of space. North facing windows were preferred as no blinds were required to reduce glare from the sun reflecting off of work surfaces, drawings, and documents.

Item 2 – Accent, task, and general lighting scheme, with a mean of 1.52, indicated the importance of a lighting scheme that can adjust to different work

conditions and still create a positive ambiance to the design office. The lighting levels should be at the control of the user. This code was included in theme 8, “Artificial lighting”.

Item 3 – Amount of work surface, with a mean of 1.56, for Interior Designers was the requirement to have enough layout space for samples, images, and large drawings along with a computer, mounting surfaces, and a bit of open desk for coffee etc. Some participants mentioned their preferences for a “u” shaped, or a curved form of work surface that wrapped around them. The “L” shaped workstation, presented in the background of Figure 5.1 would be the minimum solution for designers. Some participants still used drafting boards which can be used for more than just drafting. This item was represented in theme 2, “Work surfaces”.

Item 4 – Illumination levels, with a mean of 1.58, referred to the amount of light measured in footcandles or lux falling on a surface. Proper illumination levels can be supplemented by daylight during the day, but when the sun goes down the lighting levels need to adjust in a manner that is comfortable to the user. This item was introduced by the investigator into the survey for testing and would fall in theme 8, “Artificial light”.

Item 5 – Ergonomic chair with a mean of 1.60 was identified as the most important piece of furniture, after work surfaces, which is understandable especially when a worker can be sitting for hours. The adjustable features and good back support offered by many office chairs on the market can create a comfortable, healthy fit for the user. This was the most mentioned item under theme 6, “Ergonomic furniture”.

Item 6 – Computer set up, with a mean of 1.63, was the highest rated item in theme 3, “Personal Items”. It is a portable work surface that allows the user to be connected to the world almost anywhere. Technology has changed the way we do work.

Item 7 – Window with a view to a natural horizon, with a mean of 1.60, allows the worker to be connected with nature and benefit with short escapes from work tasks. Many studies have emphasized the importance of windows with views of nature to a person’s overall health and feeling of well being. This item would fall into theme 1, “Daylight and view”.

Item 8 – Fresh clean air, with a mean of 1.76, was the number one selection of “desirable office conditions” in the Government study, “Workstation design for organizational productivity” (Charles et al. 2004). This item was included in theme 8, “Air conditioning”. Operable windows, item 13, allowed for fresh air to enter the building.

Item 9 – Skylight, with a mean of 1.76, was included with theme 1, “Daylight and view” and as with windows northern exposure was preferred.

Item 10 – Ample Storage with a mean of 1.80 was included in theme 2, “Work surfaces” because storage removes active files and required reference materials from the work surface. Many participants mentioned that they needed a clean, organized workstation to be creative.

Item 11 – Access to outdoor seating, with a mean of 1.89, was added to the survey by the investigator to test the code. Only one participant in stage one mentioned that he/she had “times my mind stalls and it is common for me to get up and step outside…to refresh my thoughts”.

Item 12 – Access to a variety of work spaces, with a mean of 1.91, included multiple work areas that allow an office worker the freedom to work away from their designated workstation and these areas usually afford more privacy, or allow for groups of individuals to collaborate on a project. Some of these spaces today have a more casual atmosphere. Item 12 is part of theme 7, "Multiple work/play areas".

Item 13 – Ability to open a window, with a mean of 1.94, was not placed in a theme as it was a very rare circumstance that was only mentioned once by a participant in stage one who found the "operable windows are a real treat…sounds of the street below makes me feel connected to the outside world".

Item 14 – Outdoor walking paths, with a mean of 1.95, was again added to the survey by the investigator for testing. Although not mentioned by any participants, these types of areas are available to some office workers and we may find that outdoor activity areas may become a more common expansion of office space in the future as they promote both physical and mental health.

Item 15 – Flexible workstation, with a mean of 1.96, was included in theme 2, "Work surfaces", but it could be interpreted in many ways. This item may climb to the top of the list in the future when work spaces are allowed to be "planned anonymously, emerging spontaneously, changing unpredictably, shaped by the creativity of the users, and developed just in time" (De Certeau, 1984).

Item 16 – Posting surfaces, with a mean of 1.97, was included in theme 3, "Personal items". This is one item that office workers can control and it is an economical addition to the workstation. Other items included in theme 3 are technical devices, music, drawing tools, reference materials, books, magazines, photos, artwork,

items added to a tack board, items drawn on a whiteboard, and other unique items all of which are not usually included in design specifications for the office design, but added by people using the space after the furniture and fixtures are installed. Inventive ways to allow office workers to successfully incorporate personal items into the workplace should be explored. Technical devices have made big advancements as shown in the collaborative area in Figure 5.1 with the large double monitors and the laptops; each able to wirelessly take over a screen during a group discussion; the office video game.

Item 17 – Visual access to team members, with a mean of 2.00, represented in theme 5, “Collaboration” as the open concept was very attractive to some of the participants. Visual access allowed for sharing of ideas. Although most saw the benefits they still had concerns for privacy and the noise that could be very distracting. Some participants preferred the privacy of a home environment

Item 18 – Window with a view to an urban horizon, with a mean of 2.01, allows the worker to feel connected with the community and benefit with short escapes from work tasks through views accommodated by the window. Many businesses are moving to urban centers to offer their employees convenient access to the many services offered. This item would fall into theme 1, “Daylight and view”.

Item 19 – Private room for phone calls, with a mean of 2.04, seemed to be a noise solution for the open concept office. The participants that had these rooms appreciated that they could have a conversation on the phone without others overhearing. This item was included under theme 4, “Privacy”. Privacy features received a slightly higher ranking than collaborative events with the total sample group.

Item 20 – Multiple computer monitors, with a mean of 2.06, was placed under theme 3, “Personal items” even though there could be used in areas such as in Figure 5.1 where the monitors were shared.

Item 21 – Photos of family or friends, with a mean of 2.07, were given high ratings by males, females, and all the generations equally. These items clearly belonged in theme 3, “Personal items”.

Item 22 – Access to a closed meeting room, with a mean of 2.11, was placed under theme 4, “Privacy” because this space could isolated a small group of people and give them the opportunity to be louder without disturbing others. A meeting area that was open with no doors would have been placed under theme 5, “Collaboration”. The investigator identified privacy with a closed room and collaboration with an open concept to clearly separate the two planning concepts.

Item 23 – Space for eating and drinking while working, with a mean of 2.11, was included under theme 2, “Work surfaces” as a section of the work surface would need to be clear at all times for the items associated with this activity.

Item 24 – Heating and cooling adjustments, with a mean of 2.11, was incorporated into theme 10, “Air Conditioning”. The ability of the individual to control this feature is important, but it is not commonly integrated into commercial office buildings.

Item 25 – View of sky, with a mean of 2.12, may have been through a skylight, but there are other ways to bring a view of the sky into a space such as the clerestory windows shown in Figure 5.1. The sky view was placed in theme 1, “Daylight and view”.

Item 26 – A private office, with a mean of 2.13, was preferred by a number of participants to allow for creative thought and productivity. A closed office was placed under theme 4, “Privacy”.

Item 27 – Mobile pedestal with seat /chair for visitors, with a mean of 2.16, was positioned in theme 5, “Collaboration”. An additional seat next to a workstation allowed for teamwork.

Item 28 – Adjustable work surface heights, with a mean of 2.17, could allow the user to sit, or stand while working; which ever is more comfortable for a certain task. This item was located in theme 6, “Ergonomic furniture”.

Item 29 – Sound masking, with a mean of 2.17, helped with the reduction of office noises, but some participants said this system was not efficient enough. This application produced what some participants called the illusion of a quieter environment was placed under theme 4, “Privacy”.

Item 30 – Colours and textures, with a mean of 2.19, was positioned under theme 12, “Colour”. The addition of a colour was preferred, although some participants preferred spaces with all neutral finishes. Colour preference is very personal.

Item 31 – Small rooms with lounge furniture, with a mean of 2.23, was added to the survey by the investigator for testing. Lounge furniture was mentioned by a few participants but no one included lounge furniture in a room and therefore it was not applied to a theme.

Item 32 – Layered surfaces, with a mean of 2.24, related to the design of the workstation and were include in theme 2, “Work surfaces”. Most participants seemed to

apply the definition given for creativity and associated creativity with the work process that produced a finished product.

Item 33 – Personal music, with a mean of 2.26, was placed under theme 3, "Personal items". To avoid disturbing others, this music would be listened to through earphones if the listener was in an area with other office workers.

Item 34 – Access to photocopy area, with a mean of 2.26, again assisted with the process of work that followed the creative thought. This item was placed into the survey for testing by the investigator and was not applied to any theme.

Item 35 – Plant at a workstation, with a mean of 2.27, was more popular with females than males. It was placed under theme 3, "Personal items" and theme 9, "Nature". This was the only acceptation to the one reference per code rule applied to data analysis in this study.

All the items on this list represented features in the physical environment in the current 2012 design office. Many of these offices have been designed to encourage creativity in the workplace as it is a necessity of the design profession. Some of the participants involved in selecting of this list occupied office environments with the most recent design features available and others were not as fortunate.

Limitations of Study

This study achieved the goal of producing a list of "Items that Encourage Creativity in the Workplace", but this list was case sensitive and cannot be able to be applied universally. The sample group in this research design was very specialized and required some unique items in the physical workplace to do their work. Other professions, for example, may not feel that a large amount of work surface is needed to

enhance their creativity but they may need a specific type of work surface. The issue of having the correct list could be addressed with a thorough evaluation of a person's creative needs produced with a reliable instrument of measure recommended by this investigator.

The narrative process utilized in this study produced insightful information but there may have been some misinterpretation of the data by the 2 participants in stage two and the investigator in stage four. This issue could possibly be alleviated in future studies if the investigator included all the participants in the process of pulling the codes from the narrative. This process of connecting with the participant after the narrative was completed could not be applied in this study due to time restraints, budget, and locations of all the participants. The investigator would also have to be highly trained in this process as a participant could be uncomfortable filtering through their narrative with the researcher. In fact, the freedom and the private circumstances afforded the participants in this research design may be the best approach to collecting information on this subject.

The participants in this study were in a profession that demands creativity on a daily basis. Therefore results of their efforts can be seen in a tangible product; many of them innovative to various degrees, but there are other professions were the product is not so concrete. This study does not address the physical environmental requirements to encourage creativity for all types of professions; the larger picture. This study only investigated what Designers of interiors perceived to need to encourage their creativity. Study of the physical environment in other professional offices would be of value.

The concept of human perception was relied upon heavily for this study and case studies may determine more accurately what it is that designers of any type of product truly need in terms of the physical environment to produce innovative products. To assist with case studies, a programming document should be produced during the office design process to be used for a site evaluation a few years after occupation of an office to evaluate success and failures of the design. It would be very beneficial if this information was shared with other designers. There was limited data from current case studies on creativity in the workplace and this may be attributed to the competitive nature of the market. What type of physical environments are organizations, who rely on creative individuals to produce innovative products, supplying their office workers? The data collected in this study is reflected in Apple's latest project as their proposed building maximizes window area and natural views (see Figure 5.2). How successful will this project be?

The physical environment is just one component of an organizational ecology – information technology and work processes must also be considered; all part of the total workplace. It was understandable that the participants in this study went beyond the workstation as the workplace "is not simply one's desk, office, or workstation in an office building…cafeteria…car…home …", but "just about any place one can think, write, talk, or read" (Becker, & Steele, 1995, p.14). The size and complexity of hand held technical devices in 2012 has freed the worker from their workstation and allows them to be connected to others anywhere. This study produced data on multiple work places in the commercial and home office but did not explore work areas outside a building.

Figures 5.2 A Building Designed to Encourage Creativity.
Apple's new headquarters will be four storeys and 1,463 m. around. Picture attached to short article by A. Ballingall, (Maclean's magazine, January 9, 2012).

Implications of the Research

Further study is required to design and evaluate an instrument of measure that can indentify how to manipulate the physical environment to enhance an office worker's creativity at their workstations in the total office. This instrument could take the form of a survey, or a mock up office environment that allows the office worker to indentify their needs through the data collected at this site with the assistance of an investigator. An individual's personal preferences could then be accommodated into the total office environment. This study has identified and documented that there was a variety of personal preferences in the physical environment that encourage creativity. A survey could produce empirical data on an office worker's preferences quickly,

efficiently, and economically. A mock up office could provide an environmental reaction score (person exposed to various conditions – allowing them to score each environment – personal preferences determined) that more accurately would determine the ideal office features for an office worker. An individual could then be appropriately placed into the physical office environment with exposure to features that maximizes their creative potential. Ongoing investigation will be required to update such an instrument of measure for enhancing creativity in the physical workplace.

Much of what is being proposed for future research here comes with a high price but there is one area that affords office workers the freedom to encourage their own creativity and these items, that are economically reasonably, are included under theme 3, “Personal items”. Innovative items, in this category, designed specifically to encourage creativity of a user in an office workstation could support human creative endeavors.

Organizations depend on efficient productivity of their office workers. A study investigating the production process that takes a creative idea and turns it into an innovative product should be examined in existing physical environments where individuals are under pressure to produce; physical environments that support the health and happiness of the individual in the workplace.

The Thesis Question Revisited

How can designers and organizations encourage the individual creative process to occur at the office workstation through the physical work environment? Organizations need to nurture their employees’ creativity through the physical work environment if they want to be competitive in today’s market. Interior Designers and

facility managers need evidence based tools to produce designs that will offer the office workers, who spend a tremendous amount of their lives sitting at work stations, areas that promote healthy, happy, and creative lifestyles.

Given evidence from psychology that people are more friendly and sociable when they experience positive affect, designers will need to concentrate on creating, or specifying workstations that will make each individual happy within an organizational office system. Interior Designers, with their vast and specialized expertise, should also be involved in the research process as they know how to make people happy through the built interior.

Achieving positive affect and creativity in organizational settings is an extremely complicated and challenging process with numerous variables that are constantly changing. Therefore, conducting longitudinal research on the complexities of organizational life is a necessity. “Only through such investigation will we develop an understanding of the connections between how people feel, how they think, and how they perform in work organizations” (Ambile, 2005, p.398).

Definitions

Creativity: The definition for creativity, as it applies to an organization, is very similar amongst researchers. Oldham and Cummings (1996) stated that, “When employees perform creatively, they suggest novel and useful products, ideas, or procedures that provide an organization with important raw material for subsequent development and possible implementation” (p. 607).

Dynamism: The degree of energy and activity within an organization

Workstation: A workstation could consist of just a 30”x 60”work surface and a chair or be a very complex system of furniture components combined to accommodate a variety of work tasks and user needs. Home offices also apply.

Likert scale: The likert scale in an interval or rating instrument of measure employing the optional responses – strongly agree to strongly disagree with assumed equal distances between options as it has been well tested.

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Appendix A: Survey Introduction

Encouraging Creativity in the Workplace through the Physical Office Environ...

SURVEY INTRODUCTION

This survey is divided into 6 parts as follows:

PART 1 is used to describe your present workstation

PART 2 applies to all workstations you have occupied. You may pull from past experiences to complete this portion of the survey.

PART 3 applies to the physical properties of the overall office environment were you work or have worked. Again you may pull from past experiences to complete this portion of the survey.

PART 4 collects demographics

PART 5 applies to the overall rating of your present workstation

PART 6 allows you to write a narrative about how your present workstation encourages your creativity. You are then asked to list the top 3 features you feel encourage your creativity the most. You may pull from past or present experiences to make this list.

The survey design will guide you through these 6 parts.

Parts I through 5 should take you approximately 20 minutes to complete. Part 6 is optional but if you decide to complete the narrative portion of this survey it may take an additional 20 minutes. Below are 2 definitions that you should consider when completing this survey. You will be informed how to access the results of this survey and research project. Your participation in this survey is greatly appreciated.

DEFINITIONS

WORKSTATION: A workstation could consist of just a work surface (30"x 60") and a chair or be a very complex system of furniture components combined to accommodate a variety of work tasks and user needs. Although this survey is concentrating on workstations in an organizational office setting, home offices also apply and will be used as a comparison.

CREATIVITY: The definition for creativity, as it applies to an organization, is very similar amongst researchers. Oldham and Cummings (1996) stated that, "When employees perform creatively, they suggest novel and useful products, ideas, or procedures that provide an organization with important raw material for subsequent development and possible implementation" (p. 607). Organizations are seeking to foster individual creativity and team work as it is an important source of innovation that is a necessity in the current market (Hirst, Knippenberg, & Zhou, 2009).

Appendix B: Survey Part 1 – Page 1 of 2

Part 1 of 6 : Description of Your Present Workstation

The questions in Part One of this survey relate to your PRESENT WORKSTATION.

If you have the ability in your total office or home environment to use a variety of workstations or work areas select the one that you feel is most conducive to your creative thought process.

1. Select which statement best describes your current workstation:

- ☐ I have a designated workstation in an office environment
- ☐ I have a non designated workstation that I prefer to work at in an office environment
- ☐ I have an office in my home which is my primary workplace

Other (please specify)

2. Select which statement best describes the form of your workstation

- ☐ My workstation has no panels/dividers and is very open
- ☐ My workstation has low panels/dividers that are less than 4'-0" from the floor) and is open
- ☐ My workstation has panels/dividers that are over 4'-0" from the floor that provided some visual privacy
- ☐ I have a private office and can close the door

Other (please specify)

3. How many other office workers, seated in their workstations, can you see while sitting at your workstation?

- ☐ I cannot see anyone seated at another workstation while sitting at my workstation
- ☐ 1 to 2 people
- ☐ 3 to 6 people
- ☐ 7 to 10 people
- ☐ More than 10 people

4. How much square footage does your workstation occupy? This does not include aisle space (access to workstation) unless it is part of your personal space.

- ☐ Less than 36 square feet
- ☐ 36 sq. ft. to 48 sq. ft.
- ☐ 49 sq. ft to 64 sq. ft.
- ☐ Over 64 square feet

Appendix B: Survey Part 1 – Page 2 of 2

5. Which statement best describes how the design of your present workstation was determined?

- ☐ I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.
- ☐ I was given a standard workstation that was adjusted to meet my needs
- ☐ I was not consulted for the design of my workstation but the workstation meets my needs
- ☐ I was not consulted for the design of my workstation and the workstation does not meet my needs

Appendix C: Survey Part 2 – Page 1 of 4

Part 2 of 6: Physical Elements of Workstations You have Occupied

The questions to follow were developed from the information collected in stage 1 and 2 of the total thesis research project. In stage 2, participants, in a focus session, pulled themes from narratives written by 12 Interior Designers, who participate in stage 1, on how the physical properties of their workstations and immediate areas affected their creativity. Consider how these elements affect your creativity (positively or negatively) while sitting at your workstation.

If you have not experienced the affect of one of the elements being presented select N/A for your response.

YOU MAY PULL FROM EXPERIENCES OF PAST WORKSTATIONS that you have had when filling out this portion of the survey. Select neutral if you feel the statement presented does not affect your creativity in anyway.

6. How many different workstations have you occupied, for a considerable amount of time, over the course of your design career?

- ☐ Only 1 workstation
- ☐ 2 to 3 workstations
- ☐ 4 to 5 workstations
- ☐ More than 5 workstations

7. Ergonomic chair that can be personalized to meet your needs

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Chair	◯	◯	◯	◯	◯	◯

8. A mobile pedestal with cushion seating surface or chair for a visitor

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Modile pedestal with seat	◯	◯	◯	◯	◯	◯

9. A lounge chair in your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Lounge chair	◯	◯	◯	◯	◯	◯

10. Work surfaces that can be adjusted up to standing height

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Adjustable work surface heights	◯	◯	◯	◯	◯	◯

11. Multiple computer monitors

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Multiple monitors	◯	◯	◯	◯	◯	◯

12. Adequate amount of work surfaces to allow for multiple tasks at the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Amount of work surface	◯	◯	◯	◯	◯	◯

Appendix C: Survey Part 2 – Page 2 of 4

13. Adequate amount of work surfaces to allow for eating and drinking at the workstation while working

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	NA
Eating & drinking at workstation	◯	◯	◯	◯	◯	◯

14. Large tackable or magnetic surfaces in or adjacent to workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Posting surfaces	◯	◯	◯	◯	◯	◯

15. Ability to make some personal adjustments to the heating and cooling system for your individual workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Heating & cooling adjustments	◯	◯	◯	◯	◯	◯

16. Fresh, clean air at the workstation in the office

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Fresh, clean air	◯	◯	◯	◯	◯	◯

17. Proper set up for computer/laptop being used at the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Computer set up	◯	◯	◯	◯	◯	◯

18. Ample storage and paper management space in the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Ample storage	◯	◯	◯	◯	◯	◯

19. Privacy to concentrate on an idea achieved with the use of panels or walls over 54"

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Privacy acheived with panels or walls	◯	◯	◯	◯	◯	◯

20. Shared work surfaces or mobile table connected or adjacent to the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Shared work surfaces	◯	◯	◯	◯	◯	◯

21. Able to view and use varied layered surfaces within the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Layered surfaces	◯	◯	◯	◯	◯	◯

22. A private office with full height walls and a door

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
A private office	◯	◯	◯	◯	◯	◯

23. Music over the general speaker system

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Music over a speaker system	◯	◯	◯	◯	◯	◯

Appendix C: Survey Part 2 – Page 3 of 4

24. Music from your personal portable media player used with earphones

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Personal music	◯	◯	◯	◯	◯	◯

25. The ability to see others while sitting at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Seeing other people	◯	◯	◯	◯	◯	◯

26. The ability of others to see you sitting at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Others see you	◯	◯	◯	◯	◯	◯

27. The ability to hear other people's conversations

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Hear conversations	◯	◯	◯	◯	◯	◯

28. The ability of others to hear your conversations

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Others hear your conversations	◯	◯	◯	◯	◯	◯

29. Ability to hear phone conversations of other staff workers

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Ability to hear phone conversations	◯	◯	◯	◯	◯	◯

30. Ability of other staff workers to hear your telephone conversations

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Others hear your phone conversations	◯	◯	◯	◯	◯	◯

31. White boards, or other vertical drawing surfaces, for quick notes and diagrams

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Vertical drawing surfaces	◯	◯	◯	◯	◯	◯

32. Space supplied to personalize your workstation with items of your choice

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Ability to personalize space	◯	◯	◯	◯	◯	◯

33. Plant(s) at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Plant	◯	◯	◯	◯	◯	◯

34. Landscape photos at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Landscape photos	◯	◯	◯	◯	◯	◯

35. Photos of family and or friends at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Photos of family or friends	◯	◯	◯	◯	◯	◯

Appendix C: Survey Part 2 – Page 4 of 4

36. Pet(s) at your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Pet(s)	◯	◯	◯	◯	◯	◯

37. Flexibility of workstation components to accommodate various types of work

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Flexible workstation	◯	◯	◯	◯	◯	◯

38. Direct view to a window with an urban (buildings) horizon

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
View of urban horizon	◯	◯	◯	◯	◯	◯

39. Direct view to a window with a horizon with natural scenery

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
View to natural horizon	◯	◯	◯	◯	◯	◯

40. Direct view to a large portion of the office (interior horizon)

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
View to an interior horizon	◯	◯	◯	◯	◯	◯

41. The ability to open a window by your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Ability to open a window	◯	◯	◯	◯	◯	◯

42. Visual access to unique points of interest in the building interior such as an adjacent showroom

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Visual access to unique points of view	◯	◯	◯	◯	◯	◯

Appendix D: Survey Part 3 – Page 1 of 2

Part 3 of 6 : Physical Properties of Your Overall Office Environment

The questions to follow were also developed from the information collected in stage 1 and 2 of the total thesis research project. Consider how these physical properties affect your creative levels (positively or negatively) while sitting at a workstation.

If you have not experienced the affect of one of the elements being presented select N/A for your response.

YOU MAY PULL FROM EXPERIENCES OF PAST WORKSTATIONS THAT YOU HAVE HAD when filling out this portion of the survey. Select neutral if you feel the statement presented does not affect your creativity in anyway. Consider how your workstation is situated in the building when answering the questions here.

43. Neutral finishes and materials throughout the office and the workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Neutral finishes & materials	◯	◯	◯	◯	◯	◯

44. A variety of colours and textures on finishes

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Colours & textures	◯	◯	◯	◯	◯	◯

45. An office lighting scheme with proper levels of lighting fall where illumination is desired

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Illumination levels	◯	◯	◯	◯	◯	◯

46. Office lighting scheme with accent, task and general lighting

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Accent, task & general lighting scheme	◯	◯	◯	◯	◯	◯

47. Immediate adjacency to a photocopy area

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Access to photocopy area	◯	◯	◯	◯	◯	◯

48. Immediate adjacency to a coffee area

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Adjacency to a coffee area	◯	◯	◯	◯	◯	◯

49. Access to a shared closed meeting room

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Access to a closed meeting room	◯	◯	◯	◯	◯	◯

50. Access to a private non-designated closed room for private thought

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Private closed room	◯	◯	◯	◯	◯	◯

51. Access to a private closed room for telephone calls

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Private room for phone calls	◯	◯	◯	◯	◯	◯

Appendix D: Survey Part 3 – Page 2 of 2

52. Access to outdoor seating with natural settings

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Access to outdoor seating	◯	◯	◯	◯	◯	◯

53. Access to outdoor walking paths with natural settings

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Outdoor walking paths	◯	◯	◯	◯	◯	◯

54. Access to small rooms that accommodate up to 4 people with lounge furniture

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Small rooms with lounge furniture	◯	◯	◯	◯	◯	◯

55. Access to a variety of spaces, away from your workstation, that allows you to change your work environment

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Various work areas	◯	◯	◯	◯	◯	◯

56. Shared standing height work surfaces

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Shared standing height work surfaces	◯	◯	◯	◯	◯	◯

57. The use of sound masking throughout the office

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Sound masking	◯	◯	◯	◯	◯	◯

58. Natural light through a skylight

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Skylight	◯	◯	◯	◯	◯	◯

59. The ability to view the sky through a skylight while seated in your workstation

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
View of sky	◯	◯	◯	◯	◯	◯

60. Daylight through a window

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Daylight through a window	◯	◯	◯	◯	◯	◯

61. Visual access to staff members that work directly with you on a daily bases

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Visual access to team members	◯	◯	◯	◯	◯	◯

62. Visual access to staff members from areas not directly related to your work

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Visual access to non team members	◯	◯	◯	◯	◯	◯

Appendix E: Survey Part 4

Part 4 of 6 : Demographics

63. For which association are you a member?

- [ ] ASID
- [ ] IDC

64. Please indicate your designation

- [ ] Interior Designer
- [ ] Interior Designer and Interior Design Educator

Other (please specify)

65. Select the state, province or territory where your office is located from the drop - down menu:

Other (please specify)

66. Please indicate if you are female or male

- [ ] Female
- [ ] Male

67. Which generation of worker are you?

- [ ] Traditional (1928 – 1945)
- [ ] Boomer (1946 – 1964)
- [ ] Generation X (1965 – 1980)
- [ ] Generation Y (1981 – 1991)

Appendix F: Survey Part 5

Part 5 of 6 : Overall Ratings of Your Present Workstation

Consider only your PRESENT WORKSTATION when selecting the ratings in this part of the survey.

68. Rate your overall experience with the amount of privacy you have while sitting at your present workstation, during a typical work day, in terms of encouraging your creativity

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Privacy	◯	◯	◯	◯	◯	◯

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being.

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Affect design, size and location has on your well being	◯	◯	◯	◯	◯	◯

70. Rate your overall experience with the design, size and location of your present workstation, in the office, for encouraging your creativity

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Affect of design, size & location on your creativity	◯	◯	◯	◯	◯	◯

71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity. Do not answer this question if you do not have access to multiple work areas at the office.

	1 – Very Positive	2 – Positive	3 – Neutral	4 – Negative	5 – Very Negative	N/A
Multiple work areas	◯	◯	◯	◯	◯	◯

Appendix G: Survey Part 6

Part 6 of 6: Narrative (Optional)

This is the last part to this survey. It allows you the opportunity to add to the information being collected. The goal of this research project is to create a list of items in the physical environment that people, in this case Interior Designers, feel encourage their creativity while sitting or standing at a workstation. Each item on the list will be placed in order of importance as determined by the participants in the survey.

Thank you for taking the time out of your busy schedule to complete this survey.

72. Write a paragraph about how your present workstation encourages your creativity in the box provided. Also list the top 3 physical features in the office environment, in order of importance to you, that have enhanced your creativity. You may pull these items from any workstation that you have experienced in the past.

Appendix H: Cross Tabulated Survey Questions

1. Select which statement best describes your current workstation: Create Chart Download

	Please indicate if you are female or male		
	Female	Male	Response Totals
I have a designated workstation in an office environment	**62.0% (114)**	**72.7% (16)**	**62.9% (129)**
I have a non designated workstation that I prefer to work at in an office environment	6.0% (11)	4.5% (1)	5.9% (12)
I have an office in my home which is my primary workplace	33.2% (61)	22.7% (5)	32.2% (66)
Other (please specify)	15 replies	1 reply	16
answered question	184	22	**205**
		skipped question	**12**

Cross- tabulation of question 1 with question 66

1. Select which statement best describes your current workstation: Create Chart Download

	Which generation of worker are you?				
	Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
I have a designated workstation in an office environment	**37.5% (3)**	**57.5% (61)**	**64.3% (36)**	**80.0% (28)**	**62.7% (128)**
I have a non designated workstation that I prefer to work at in an office environment	25.0% (2)	3.8% (4)	5.4% (3)	8.6% (3)	5.9% (12)
I have an office in my home which is my primary workplace	**37.5% (3)**	39.6% (42)	32.1% (18)	11.4% (4)	32.4% (66)
Other (please specify)	1 reply	12 replies	2 replies	1 reply	16
answered question	8	106	56	35	**204**
				skipped question	**12**

Cross- tabulation of question 1 with question 67

Appendix I: Cross Tabulated Survey Questions

2. Select which statement best describes the form of your workstation Create Chart Download

	Select which statement best describes your current workstation:		
	I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	Response Totals
My workstation has no panels/dividers and is very open	**31.8% (47)**	**61.5% (8)**	**34.2% (55)**
My workstation has low panels/dividers that are less than 4'-0" from the floor) and is open	22.3% (33)	7.7% (1)	21.1% (34)
My workstation has panels/dividers that are over 4'-0" from the floor that provided some visual privacy	22.3% (33)	0.0% (0)	20.5% (33)
I have a private office and can close the door	26.4% (39)	30.8% (4)	26.7% (43)
Other (please specify)	8 replies	2 replies	10
answered question	148	13	**161**
		skipped question	**5**

Cross- tabulation of question 2 with question 1

2. Select which statement best describes the form of your workstation Create Chart Download

	Please indicate if you are female or male		
	Female	Male	Response Totals
My workstation has no panels/dividers and is very open	31.9% (59)	21.7% (5)	30.9% (64)
My workstation has low panels/dividers that are less than 4'-0" from the floor) and is open	14.1% (26)	26.1% (6)	15.5% (32)
My workstation has panels/dividers that are over 4'-0" from the floor that provided some visual privacy	14.1% (26)	21.7% (5)	14.5% (30)
I have a private office and can close the door	**41.6% (77)**	**34.8% (8)**	**41.1% (85)**
Other (please specify)	13 replies	1 reply	14
answered question	185	23	**207**
		skipped question	**10**

Cross- tabulation of question 2 with question 66

Appendix J: Cross Tabulated Survey Questions

3. How many other office workers, seated in their workstations, can you see while sitting at your workstation? Create Chart Download

	Select which statement best describes your current workstation:			
	I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
I cannot see anyone seated at another workstation while sitting at my workstation	27.0% (41)	15.4% (2)	**69.2% (54)**	**40.4% (97)**
1 to 2 people	**33.6% (51)**	15.4% (2)	28.2% (22)	31.3% (75)
3 to 6 people	25.7% (39)	**38.5% (5)**	2.6% (2)	18.3% (44)
7 to 10 people	9.2% (14)	7.7% (1)	0.0% (0)	6.3% (15)
More than 10 people	5.3% (8)	23.1% (3)	1.3% (1)	4.6% (11)
answered question	152	13	78	240
			skipped question	5

Cross- tabulation of question 3 with question 1

Appendix K: Cross Tabulated Survey Questions

4. How much square footage does your workstation occupy? This does not include aisle space (access to workstation) unless it is part of your personal space. Create Chart Download

	Select which statement best describes your current workstation:			
	I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
Less than 36 square feet	9.3% (14)	**42.9% (6)**	14.1% (11)	12.9% (31)
36 sq. ft. to 48 sq. ft.	25.3% (38)	14.3% (2)	21.8% (17)	23.8% (57)
49 sq. ft to 64 sq. ft.	28.7% (43)	28.6% (4)	15.4% (12)	23.8% (57)
Over 64 square feet	**37.3% (56)**	14.3% (2)	**51.3% (40)**	**40.8% (98)**
answered question	150	14	78	**240**
			skipped question	**5**

Cross- tabulation of question 4 with question 1

4. How much square footage does your workstation occupy? This does not include aisle space (access to workstation) unless it is part of your personal space. Create Chart Download

	Which generation of worker are you?				
	Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
Less than 36 square feet	22.2% (2)	7.8% (9)	16.1% (9)	22.2% (8)	12.6% (27)
36 sq. ft. to 48 sq. ft.	22.2% (2)	21.7% (25)	21.4% (12)	27.8% (10)	22.8% (49)
49 sq. ft to 64 sq. ft.	11.1% (1)	16.5% (19)	30.4% (17)	**33.3% (12)**	22.8% (49)
Over 64 square feet	**44.4% (4)**	**55.7% (64)**	**33.9% (19)**	16.7% (6)	**43.3% (93)**
answered question	9	115	56	36	**215**
				skipped question	**1**

Cross- tabulation of question 4 with question 67

Appendix L: Cross Tabulated Survey Questions

5. Which statement best describes how the design of your present workstation was determined? Create Chart Download

	Select which statement best describes your current workstation:			
	I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	**34.4% (52)**	**35.7% (5)**	**77.6% (59)**	**47.7% (114)**
I was given a standard workstation that was adjusted to meet my needs	17.9% (27)	7.1% (1)	7.9% (6)	14.2% (34)
I was not consulted for the design of my workstation but the workstation meets my needs	31.1% (47)	**35.7% (5)**	7.9% (6)	24.3% (58)
I was not consulted for the design of my workstation and the workstation does not meet my needs	17.2% (26)	21.4% (3)	7.9% (6)	14.6% (35)
answered question	151	14	76	239
			skipped question	6

Cross- tabulation of question 5 with question 1

67. Which generation of worker are you? Create Chart Download

	Which statement best describes how the design of your present workstation was determined?				
	I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Traditional (1928 – 1945)	5.8% (6)	0.0% (0)	1.9% (1)	3.1% (1)	3.7% (8)
Boomer (1946 – 1964)	**67.0% (69)**	**56.7% (17)**	28.8% (15)	**46.9% (15)**	**53.7% (115)**
Generation X (1965 – 1980)	22.3% (23)	30.0% (9)	**34.6% (18)**	25.0% (8)	26.2% (56)
Generation Y (1981 – 1991)	5.8% (6)	13.3% (4)	**34.6% (18)**	25.0% (8)	16.8% (36)
answered question	103	30	52	32	**214**
				skipped question	**38**

Cross- tabulation of question 5 with question 67

Appendix M: Cross Tabulated Survey Questions

67. Which generation of worker are you? Create Chart Download

	Please indicate if you are female or male		
	Female	Male	Response Totals
Traditional (1928 – 1945)	3.1% (6)	13.0% (3)	4.2% (9)
Boomer (1946 – 1964)	**53.1% (103)**	**52.2% (12)**	**53.2% (115)**
Generation X (1965 – 1980)	25.8% (50)	30.4% (7)	26.4% (57)
Generation Y (1981 – 1991)	18.0% (35)	8.7% (2)	16.7% (36)
answered question	194	23	**216**
		skipped question	**1**

Cross- tabulation of question 66 with question 67

68. Rate your overall experience with the amount of privacy you have while sitting at your present workstation, during a typical work day, in terms of encouraging your creativity Download

		Which generation of worker are you?				
		Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
Privacy	1 – Very Positive	33.3% (3)	**39.5% (45)**	24.6% (14)	16.7% (6)	
	2 – Positive	**55.6% (5)**	36.0% (41)	**38.6% (22)**	30.6% (11)	
	3 – Neutral	0.0% (0)	7.9% (9)	19.3% (11)	**33.3% (12)**	
	4 – Negative	11.1% (1)	10.5% (12)	14.0% (8)	19.4% (7)	
	5 – Very Negative	0.0% (0)	4.4% (5)	3.5% (2)	0.0% (0)	
	N/A	0.0% (0)	1.8% (2)	0.0% (0)	0.0% (0)	
		9	114	57	36	215
answered question		9	114	57	36	**215**
					skipped question	**1**

Cross- tabulation of question 68 with question 67

Appendix N: Cross Tabulated Survey Questions

68. Rate your overall experience with the amount of privacy you have while sitting at your present workstation, during a typical work day, in terms of encouraging your creativity Download

		Select which statement best describes your current workstation:			
		I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
Privacy	1 – Very Positive	20.3% (26)	33.3% (4)	**47.0% (31)**	
	2 – Positive	**39.8% (51)**	8.3% (1)	39.4% (26)	
	3 – Neutral	19.5% (25)	16.7% (2)	7.6% (5)	
	4 – Negative	14.1% (18)	**41.7% (5)**	4.5% (3)	
	5 – Very Negative	5.5% (7)	0.0% (0)	0.0% (0)	
	N/A	0.8% (1)	0.0% (0)	1.5% (1)	
		128	12	66	204
	answered question	128	12	66	**204**
				skipped question	**41**

Cross- tabulation of question 68 with question 1

68. Rate your overall experience with the amount of privacy you have while sitting at your present workstation, during a typical work day, in terms of encouraging your creativity Download

		Please indicate if you are female or male		
		Female	Male	Response Totals
Privacy	1 – Very Positive	30.4% (59)	34.8% (8)	
	2 – Positive	**36.6% (71)**	**39.1% (9)**	
	3 – Neutral	16.0% (31)	8.7% (2)	
	4 – Negative	12.9% (25)	13.0% (3)	
	5 – Very Negative	3.1% (6)	4.3% (1)	
	N/A	1.0% (2)	0.0% (0)	
		194	23	216
	answered question	194	23	**216**
			skipped question	**1**

Cross- tabulation of question 68 with question 66

Appendix O: Cross Tabulated Survey Questions

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being. Download

		Which generation of worker are you?				
		Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
Affect design, size and location has on your well being	1 – Very Positive	**44.4% (4)**	**38.3% (44)**	21.1% (12)	11.1% (4)	
	2 – Positive	33.3% (3)	37.4% (43)	**38.6% (22)**	**38.9% (14)**	
	3 – Neutral	22.2% (2)	13.9% (16)	35.1% (20)	25.0% (9)	
	4 – Negative	0.0% (0)	7.8% (9)	3.5% (2)	19.4% (7)	
	5 – Very Negative	0.0% (0)	1.7% (2)	1.8% (1)	2.8% (1)	
	N/A	0.0% (0)	0.9% (1)	0.0% (0)	2.8% (1)	
		9	115	57	36	216
answered question		9	115	57	36	**216**
					skipped question	**0**

Cross- tabulation of question 69 with question 67

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being. Download

		Select which statement best describes your current workstation:			
		I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
Affect design, size and location has on your well being	1 – Very Positive	23.3% (30)	**33.3% (4)**	37.9% (25)	
	2 – Positive	**40.3% (52)**	16.7% (2)	**40.9% (27)**	
	3 – Neutral	24.8% (32)	25.0% (3)	13.6% (9)	
	4 – Negative	7.8% (10)	25.0% (3)	6.1% (4)	
	5 – Very Negative	3.1% (4)	0.0% (0)	0.0% (0)	
	N/A	0.8% (1)	0.0% (0)	1.5% (1)	
		129	12	66	205
answered question		129	12	66	**205**
				skipped question	**40**

Cross- tabulation of question 69 with question 1

Appendix P: Cross Tabulated Survey Questions

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being. Download

		Please indicate if you are female or male		
		Female	Male	Response Totals
Affect design, size and location has on your well being	1 – Very Positive	28.2% (55)	34.8% (8)	
	2 – Positive	**37.4% (73)**	**43.5% (10)**	
	3 – Neutral	23.1% (45)	8.7% (2)	
	4 – Negative	8.2% (16)	13.0% (3)	
	5 – Very Negative	2.1% (4)	0.0% (0)	
	N/A	1.0% (2)	0.0% (0)	
		195	23	217
answered question		195	23	**217**
			skipped question	**0**

Cross- tabulation of question 69 with question 66

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being. Download

		Which generation of worker are you?				
		Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
Affect design, size and location has on your well being	1 – Very Positive	**44.4% (4)**	**38.3% (44)**	21.1% (12)	11.1% (4)	
	2 – Positive	33.3% (3)	37.4% (43)	**38.6% (22)**	**38.9% (14)**	
	3 – Neutral	22.2% (2)	13.9% (16)	35.1% (20)	25.0% (9)	
	4 – Negative	0.0% (0)	7.8% (9)	3.5% (2)	19.4% (7)	
	5 – Very Negative	0.0% (0)	1.7% (2)	1.8% (1)	2.8% (1)	
	N/A	0.0% (0)	0.9% (1)	0.0% (0)	2.8% (1)	
		9	115	57	36	216
answered question		9	115	57	36	**216**
					skipped question	**0**

Cross- tabulation of question 70 with question 67

Appendix Q: Cross Tabulated Survey Questions

70. Rate your overall experience with the design, size and location of your present workstation, in the office, for encouraging your creativity Download

		Select which statement best describes your current workstation:			
		I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
Affect of design, size & location on your creativity	1 – Very Positive	17.1% (22)	33.3% (4)	36.4% (24)	
	2 – Positive	**43.4% (56)**	8.3% (1)	**40.9% (27)**	
	3 – Neutral	23.3% (30)	**41.7% (5)**	15.2% (10)	
	4 – Negative	12.4% (16)	16.7% (2)	6.1% (4)	
	5 – Very Negative	3.1% (4)	0.0% (0)	0.0% (0)	
	N/A	0.8% (1)	0.0% (0)	1.5% (1)	
		129	12	66	205
	answered question	129	12	66	**205**
				skipped question	**40**

Cross- tabulation of question 70 with question 1

71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity? Do not answer this question if you do not have access to multiple work areas at the office. Download

		Which generation of worker are you?				
		Traditional (1928 – 1945)	Boomer (1946 – 1964)	Generation X (1965 – 1980)	Generation Y (1981 – 1991)	Response Totals
Multiple work areas	1 – Very Positive	**50.0% (4)**	29.0% (31)	31.4% (16)	18.8% (6)	
	2 – Positive	37.5% (3)	**39.3% (42)**	**33.3% (17)**	**43.8% (14)**	
	3 – Neutral	0.0% (0)	3.7% (4)	9.8% (5)	18.8% (6)	
	4 – Negative	0.0% (0)	2.8% (3)	3.9% (2)	3.1% (1)	
	5 – Very Negative	0.0% (0)	0.9% (1)	0.0% (0)	0.0% (0)	
	N/A	12.5% (1)	24.3% (26)	21.6% (11)	15.6% (5)	
		8	107	51	32	197
	answered question	8	107	51	32	**197**
					skipped question	**19**

Cross- tabulation of question 71 with question 67

Appendix R: Cross Tabulated Survey Questions

71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity? Do not answer this question if you do not have access to multiple work areas at the office. Download

		Select which statement best describes your current workstation:			
		I have a designated workstation in an office environment	I have a non designated workstation that I prefer to work at in an office environment	I have an office in my home which is my primary workplace	Response Totals
Multiple work areas	1 – Very Positive	26.7% (31)	25.0% (3)	28.3% (17)	
	2 – Positive	**42.2% (49)**	**33.3% (4)**	**35.0% (21)**	
	3 – Neutral	9.5% (11)	25.0% (3)	3.3% (2)	
	4 – Negative	2.6% (3)	8.3% (1)	1.7% (1)	
	5 – Very Negative	0.9% (1)	0.0% (0)	0.0% (0)	
	N/A	18.1% (21)	8.3% (1)	31.7% (19)	
		116	12	60	186
	answered question	116	12	60	**186**
				skipped question	59

Cross- tabulation of question 71 with question 1

71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity? Do not answer this question if you do not have access to multiple work areas at the office. Download

		Please indicate if you are female or male		
		Female	Male	Response Totals
Multiple work areas	1 – Very Positive	27.2% (49)	36.8% (7)	
	2 – Positive	**37.8% (68)**	**47.4% (9)**	
	3 – Neutral	8.3% (15)	5.3% (1)	
	4 – Negative	3.3% (6)	0.0% (0)	
	5 – Very Negative	0.6% (1)	0.0% (0)	
	N/A	22.8% (41)	10.5% (2)	
		180	19	198
	answered question	180	19	**198**
			skipped question	**19**

Cross- tabulation of question 71 with question 66

Appendix S: Cross Tabulated Survey Questions

4. How much square footage does your workstation occupy? This does not include aisle space (access to workstation) unless it is part of your personal space. Create Chart Download

	Which statement best describes how the design of your present workstation was determined?				
	I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Less than 36 square feet	9.3% (11)	8.3% (3)	12.7% (8)	24.3% (9)	12.4% (31)
36 sq. ft. to 48 sq. ft.	18.6% (22)	33.3% (12)	30.2% (19)	24.3% (9)	23.9% (60)
49 sq. ft to 64 sq. ft.	16.1% (19)	19.4% (7)	**33.3% (21)**	**35.1% (13)**	23.5% (59)
Over 64 square feet	**55.9% (66)**	**38.9% (14)**	25.4% (16)	24.3% (9)	**41.4% (104)**
answered question	118	36	63	37	**251**
				skipped question	**1**

Cross- tabulation of question 5 with question 4

7. Ergonomic chair that can be personalized to meet your needs Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Chair	1 – Very Positive	**66.1% (72)**	**61.3% (19)**	**50.9% (28)**	**41.2% (14)**	
	2 – Positive	22.9% (25)	25.8% (8)	29.1% (16)	23.5% (8)	
	3 – Neutral	6.4% (7)	3.2% (1)	7.3% (4)	17.6% (6)	
	4 – Negative	0.9% (1)	6.5% (2)	7.3% (4)	5.9% (2)	
	5 – Very Negative	0.0% (0)	0.0% (0)	1.8% (1)	8.8% (3)	
	N/A	3.7% (4)	3.2% (1)	3.6% (2)	2.9% (1)	
		109	31	55	34	226
answered question		109	31	55	34	**226**
					skipped question	**26**

Cross- tabulation of question 5 with question 7

Appendix T: Cross Tabulated Survey Questions

12. Adequate amount of work surfaces to allow for multiple tasks at the workstation Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Amount of work surface	1 – Very Positive	**71.7% (76)**	**51.7% (15)**	**56.6% (30)**	**48.5% (16)**	
	2 – Positive	21.7% (23)	37.9% (11)	28.3% (15)	15.2% (5)	
	3 – Neutral	3.8% (4)	6.9% (2)	5.7% (3)	18.2% (6)	
	4 – Negative	0.0% (0)	0.0% (0)	7.5% (4)	12.1% (4)	
	5 – Very Negative	0.9% (1)	0.0% (0)	1.9% (1)	6.1% (2)	
	N/A	1.9% (2)	3.4% (1)	0.0% (0)	0.0% (0)	
		106	29	53	33	218
	answered question	106	29	53	33	**218**

Cross- tabulation of question 5 with question 12

17. Proper set up for computer/laptop being used at the workstation Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Computer set up	1 – Very Positive	**70.4% (76)**	**63.3% (19)**	**39.6% (21)**	**44.1% (15)**	
	2 – Positive	22.2% (24)	26.7% (8)	**39.6% (21)**	17.6% (6)	
	3 – Neutral	6.5% (7)	6.7% (2)	11.3% (6)	11.8% (4)	
	4 – Negative	0.9% (1)	3.3% (1)	3.8% (2)	14.7% (5)	
	5 – Very Negative	0.0% (0)	0.0% (0)	3.8% (2)	8.8% (3)	
	N/A	0.0% (0)	0.0% (0)	1.9% (1)	2.9% (1)	
		108	30	53	34	222
	answered question	108	30	53	34	**222**

Cross- tabulation of question 5 with question 17

Appendix U: Cross Tabulated Survey Questions

32. Space supplied to personalize your workstation with items of your choice Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Ability to personalize space	1 – Very Positive	39.4% (43)	22.6% (7)	22.2% (12)	29.4% (10)	
	2 – Positive	**46.8% (51)**	**54.8% (17)**	**51.9% (28)**	**35.3% (12)**	
	3 – Neutral	9.2% (10)	19.4% (6)	20.4% (11)	17.6% (6)	
	4 – Negative	1.8% (2)	0.0% (0)	5.6% (3)	2.9% (1)	
	5 – Very Negative	0.9% (1)	0.0% (0)	0.0% (0)	5.9% (2)	
	N/A	1.8% (2)	3.2% (1)	0.0% (0)	8.8% (3)	
		109	31	54	34	225
answered question		109	31	54	34	225
					skipped question	27

Cross- tabulation of question 5 with question 32

37. Flexibility of workstation components to accommodate various types of work Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Flexible workstation	1 – Very Positive	37.6% (41)	20.0% (6)	24.1% (13)	**28.1% (9)**	
	2 – Positive	**44.0% (48)**	**56.7% (17)**	**38.9% (21)**	**28.1% (9)**	
	3 – Neutral	11.0% (12)	6.7% (2)	16.7% (9)	9.4% (3)	
	4 – Negative	2.8% (3)	3.3% (1)	9.3% (5)	9.4% (3)	
	5 – Very Negative	0.0% (0)	3.3% (1)	1.9% (1)	6.3% (2)	
	N/A	4.6% (5)	10.0% (3)	9.3% (5)	18.8% (6)	
		109	30	54	32	222
answered question		109	30	54	32	222

Cross- tabulation of question 5 with question 37

Appendix V: Cross Tabulated Survey Questions

39. Direct view to a window with a horizon with natural scenery Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
View to natural horizon	1 – Very Positive	52.8% (57)	53.3% (16)	47.3% (26)	44.1% (15)	
	2 – Positive	22.2% (24)	33.3% (10)	27.3% (15)	14.7% (5)	
	3 – Neutral	12.0% (13)	3.3% (1)	5.5% (3)	8.8% (3)	
	4 – Negative	0.9% (1)	0.0% (0)	3.6% (2)	2.9% (1)	
	5 – Very Negative	1.9% (2)	0.0% (0)	0.0% (0)	5.9% (2)	
	N/A	10.2% (11)	10.0% (3)	16.4% (9)	23.5% (8)	
		108	30	55	34	224
answered question		108	30	55	34	224
					skipped question	28

Cross- tabulation of question 5 with question 39

44. A variety of colours and textures on finishes Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Colours & textures	1 – Very Positive	25.5% (26)	6.7% (2)	19.6% (10)	15.2% (5)	
	2 – Positive	48.0% (49)	70.0% (21)	52.9% (27)	30.3% (10)	
	3 – Neutral	13.7% (14)	13.3% (4)	15.7% (8)	18.2% (6)	
	4 – Negative	7.8% (8)	6.7% (2)	5.9% (3)	21.2% (7)	
	5 – Very Negative	1.0% (1)	0.0% (0)	3.9% (2)	6.1% (2)	
	N/A	3.9% (4)	3.3% (1)	2.0% (1)	9.1% (3)	
		102	30	51	33	213
answered question		102	30	51	33	213
					skipped question	39

Cross- tabulation of question 5 with question 44

Appendix W: Cross Tabulated Survey Questions

45. An office lighting scheme with proper levels of lighting fall where illumination is desired Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Illumination levels	1 – Very Positive	61.8% (63)	58.6% (17)	53.8% (28)	39.4% (13)	
	2 – Positive	31.4% (32)	31.0% (9)	34.6% (18)	36.4% (12)	
	3 – Neutral	3.9% (4)	3.4% (1)	7.7% (4)	15.2% (5)	
	4 – Negative	2.9% (3)	6.9% (2)	3.8% (2)	3.0% (1)	
	5 – Very Negative	0.0% (0)	0.0% (0)	0.0% (0)	3.0% (1)	
	N/A	0.0% (0)	0.0% (0)	0.0% (0)	3.0% (1)	
		102	29	52	33	213
answered question		102	29	52	33	213
					skipped question	39

Cross- tabulation of question 5 with question 45

46. Office lighting scheme with accent, task and general lighting Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Accent, task & general lighting scheme	1 – Very Positive	62.7% (64)	63.3% (19)	55.8% (29)	51.5% (17)	
	2 – Positive	33.3% (34)	33.3% (10)	26.9% (14)	18.2% (6)	
	3 – Neutral	2.0% (2)	0.0% (0)	9.6% (5)	18.2% (6)	
	4 – Negative	0.0% (0)	3.3% (1)	3.8% (2)	6.1% (2)	
	5 – Very Negative	1.0% (1)	0.0% (0)	0.0% (0)	3.0% (1)	
	N/A	1.0% (1)	0.0% (0)	3.8% (2)	3.0% (1)	
		102	30	52	33	214
answered question		102	30	52	33	214
					skipped question	38

Cross- tabulation of question 5 with question 46

Appendix X: Cross Tabulated Survey Questions

68. Rate your overall experience with the amount of privacy you have while sitting at your present workstation, during a typical work day, in terms of encouraging your creativity Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Privacy	1 – Very Positive	**45.6% (47)**	20.0% (6)	23.5% (12)	9.1% (3)	
	2 – Positive	38.8% (40)	**46.7% (14)**	**33.3% (17)**	18.2% (6)	
	3 – Neutral	6.8% (7)	10.0% (3)	29.4% (15)	24.2% (8)	
	4 – Negative	5.8% (6)	20.0% (6)	11.8% (6)	**36.4% (12)**	
	5 – Very Negative	1.0% (1)	3.3% (1)	2.0% (1)	12.1% (4)	
	N/A	1.9% (2)	0.0% (0)	0.0% (0)	0.0% (0)	
		103	30	51	33	214
	answered question	103	30	51	33	**214**
					skipped question	38

Cross- tabulation of question 5 with question 68

69. Rate your overall experience with the overall design, size and location of your present workstation, in the office, for giving you a feeling of well being. Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Affect design, size and location has on your well being	1 – Very Positive	**45.6% (47)**	23.3% (7)	13.5% (7)	3.0% (1)	
	2 – Positive	42.7% (44)	**33.3% (10)**	**44.2% (23)**	12.1% (4)	
	3 – Neutral	5.8% (6)	23.3% (7)	34.6% (18)	**51.5% (17)**	
	4 – Negative	3.9% (4)	13.3% (4)	7.7% (4)	27.3% (9)	
	5 – Very Negative	0.0% (0)	6.7% (2)	0.0% (0)	6.1% (2)	
	N/A	1.9% (2)	0.0% (0)	0.0% (0)	0.0% (0)	
		103	30	52	33	215
	answered question	103	30	52	33	**215**
					skipped question	37

Cross- tabulation of question 5 with question 69

Appendix Y: Cross Tabulated Survey Questions

70. Rate your overall experience with the design, size and location of your present workstation, in the office, for encouraging your creativity Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Affect of design, size & location on your creativity	1 – Very Positive	40.8% (42)	10.0% (3)	13.5% (7)	0.0% (0)	
	2 – Positive	**43.7% (45)**	**40.0% (12)**	**46.2% (24)**	15.2% (5)	
	3 – Neutral	8.7% (9)	30.0% (9)	28.8% (15)	**42.4% (14)**	
	4 – Negative	4.9% (5)	16.7% (5)	11.5% (6)	33.3% (11)	
	5 – Very Negative	0.0% (0)	3.3% (1)	0.0% (0)	9.1% (3)	
	N/A	1.9% (2)	0.0% (0)	0.0% (0)	0.0% (0)	
		103	30	52	33	215
	answered question	103	30	52	33	**215**

Cross- tabulation of question 5 with question 69

71. Rate your overall experience of having the option to work at multiple office work areas, with different characteristics, for encouraging your creativity? Do not answer this question if you do not have access to multiple work areas at the office. Download

		Which statement best describes how the design of your present workstation was determined?				
		I was consulted and/ or participated in the design of my workstation to ensure that it meets my needs.	I was given a standard workstation that was adjusted to meet my needs	I was not consulted for the design of my workstation but the workstation meets my needs	I was not consulted for the design of my workstation and the workstation does not meet my needs	Response Totals
Multiple work areas	1 – Very Positive	**38.1% (37)**	16.7% (4)	20.8% (10)	10.3% (3)	
	2 – Positive	36.1% (35)	**54.2% (13)**	**41.7% (20)**	31.0% (9)	
	3 – Neutral	4.1% (4)	8.3% (2)	14.6% (7)	10.3% (3)	
	4 – Negative	1.0% (1)	0.0% (0)	8.3% (4)	3.4% (1)	
	5 – Very Negative	0.0% (0)	0.0% (0)	0.0% (0)	3.4% (1)	
	N/A	20.6% (20)	20.8% (5)	14.6% (7)	**41.4% (12)**	
		97	24	48	29	196
	answered question	97	24	48	29	**196**
					skipped question	**56**

Cross- tabulation of question 5 with question 69

Appendix Z: List of Items that Encourage Creativity in the Workplace

Item 1 – Daylight through a window with a mean of 1.29	**Item 19 – Private room for phone calls** with a mean of 2.04
Item 2 – Accent, task and general lighting scheme with a mean of 1.52	**Item 20 – Multiple computer monitors** with a mean of 2.06
Item 3 – Amount of work surface with a mean of 1.56	**Item 21 – Photos of family or friends** with a mean of 2.07
Item 4 – Illumination levels with a mean of 1.58	**Item 22 – Access to a closed meeting room** with a mean of 2.11
Item 5 – Ergonomic chair with a mean of 1.60	**Item 23 – Space for eating and drinking while working** with a mean of 2.11
Item 6 – Computer set up with a mean of 1.63	**Item 24 – Heating and cooling adjustments** with a mean of 2.11
Item 7 – Window with a view to a natural horizon with a mean of 1.64	**Item 25 – View of sky** with a mean of 2.12
Item 8 – Fresh clean air with a mean of 1.76	**Item 26 – A private office** with a mean of 2.13
Item 9 – Skylight with a mean of 1.76	**Item 27 – Mobile pedestal with seat /chair for visitors** with a mean of 2.16
Item 10 – Ample Storage with a mean of 1.80	**Item 28 – Adjustable work surface heights** with a mean of 2.17
Item 11 – Access to outdoor seating with a mean of 1.89	**Item 29 – Sound Masking** with a mean of 2.17
Item 12 – Access to a variety of work spaces with a mean of 1.91	**Item 30 – Colours and textures** with a mean of 2.19
Item 13 – Ability to open a window with a mean of 1.94	**Item 31 – Small rooms with lounge furniture** with a mean of 2.23
Item 14 – Outdoor walking paths with a mean of 1.95	**Item 32 – Layered surfaces** with a mean of 2.24
Item 15 – Flexible workstation with a mean of 1.96	**Item 33 – Personal music** with a mean of 2.26
Item 16 – Posting surfaces with a mean of 1.97	**Item 34 – Access to photocopy area** with a mean of 2.26
Item 17 – Visual access to team members with a mean of 2.00	**Item 35 – Plant at a workstation** with a mean of 2.27
Item 18 – Window with a view to an urban horizon with a mean of 2.01	

Appendix AA: Literature Map