



Proposed home office design solutions to inspire productivity

¹Irina Mohora, ²Dana Fatol, ³Mirabela Metzler, ⁴Anca Draghici

¹*Politehnica University of Timisoara, Timisoara, Romania, irina.mohora@upt.ro*

²*Politehnica University of Timisoara, Timisoara, Romania, dana.fatol@student.upt.ro*

³*Politehnica University of Timisoara, Timisoara, Romania, mirabela.metzler@student.upt.ro*

⁴*Politehnica University of Timisoara, Timisoara, Romania, anca.draghici@upt.ro*

Abstract

The traditional workplace environment has suddenly changed due to the outbreak of the Covid-19 pandemic. Thus, many companies encourage their employees to work from home to continue their online and remote activities, avoiding congestion in offices, means of transport, etc. Prestigious European institutions and companies in the field of design, facilities management, labour research have conducted research on this major change in the work process and have tried to provide the best possible solutions to maintain high levels of productivity of people while working from home (WFH). The research presented in this article aims to identify the main challenges faced by teleworking operators and provide specific recommendations for overcoming them. At the same time, the study aims to emphasize the importance of ergonomics, active behaviour and well-being in the design of new work environments and to propose solutions that can inspire and support workers' productivity through conscious design choices.

Keywords: Telework, Wellbeing, Home Office, Design, Workplace, Covid-19

1 Introduction

Starting with the spring of 2020 several studies have been conducted as teleworking has become a general practice for millions of “white collar” workers worldwide, due to restrictions imposed by the health contingency of the Covid-19 pandemic. Studies aim to define this unprecedented situation, identify the main challenges, and provide insight information about the future of the workplace. Representative examples of exhaustive researches have been published recently such as the large global survey of Cushman and Wakefield from August 2020 [6], the Harvard Business Review article on “The Implication of Working Without An Office” [11] and the Gensler’s research “Insights From Gensler’s U.S. Work From Home Survey 2020” [10].

As the global Covid-19 pandemic unfolds, among the most common questions raising in the recent studies are [5; 6; 10;11]:

- *Will people wish to go back to their workplace?*
- *What is future for the physical workplace?*

According to the various opinions of researchers, practitioners and workplace strategists, the future workplace will offer *new experiences*, rather than just offering a newly decorated space. Liz Burow, a leader in Workplace Strategy and Design Research, has been analysing the current situation and thought about new potential strategies for developing the future workplaces [4]. She argues over the importance of social connections in the workplace: formal and informal, scheduled,

and spontaneous, interactions that are not possible while working from home (WFH). Thus, a “*hybrid model*” of teleworking and meaningful on-site interactions between colleagues, management, clients is potentially one path towards rethinking the future job place [4; 5].

The emergence to the massive home office transition phenomenon with seemingly positive productivity outcomes, determines researchers to question the future existence of the physical office. Burow argues that spontaneous interaction with peers, moments of informal collaboration and creativity need to be rethought to fit the new framework [4], supported by [1; 2, 3; 10; 11]. It is fairly said that “*one size does not fit all*”, flexibility is key, as Burow shows [4]. Furthermore, three categories of work settings, each to serve a specific purpose, must be considered: (1) home office for concentration, (2) small hubs for community connection and (3) exchange, headquarters meetings for collaboration. In any given situation, telework will unquestionably be part of the future.

The office buildings were closed temporarily for many businesses, as a rapid expansion of the pandemic caused the “*largest work-from-home experiment in history*” [6]. Professional desks have been replaced by dinner tables or improvised home desks, business attire by comfortable tracksuits, conference rooms by video conference software and office colleagues by family and pets [1; 2, 3; 10; 11]. At first, this picture appeared rather convenient, as a long-awaited pause from commutes, meetings, irritating bosses or colleagues and more family time. However, as the telework period shifted from weeks into months, signs of fatigue started to show. The new lifestyle, balancing work, school, and childcare at the same time and in the same space, turned out to be less enjoyable and more stressful than anticipated [12; 15]. The importance of ergonomics within people’s private space, their active behaviour and wellbeing gain more territory while companies’ analysed productivity during home office hours.

In this context, the research presented in this article aims to identify the main challenges faced by teleworking operators and provide specific recommendations for overcoming them. At the same time, the study aims to emphasize the importance of ergonomics, active behaviour, and well-being in the design of new work environments and to propose solutions that can inspire and support workers’ productivity through conscious design choices

2 From telecommuting to the teleworking challenges

2.1 What is telework?

The official definition formulated in the European agreement of telework [15] explains telework as “a form of organizing and/or performing work, using information technology, in the context of an employment contract/ relationship, where work, which could also be performed at the employer’s premises, is carried out away from those premises on a regular basis”. Working from home WFH is not a new practice, as one might categorize any residential activity as “work at home”. However, the newly assigned term of telework additionally involves using technology to accomplish given tasks while being at home. The term was initially introduced in 1975 by engineer and researcher Jack Nilles, also known as “the father of telecommuting and teleworking” (as cite by [14]). Further, the term of telecommuting evolved into telework along with the technological implications in the process, such as the information and communication technology (ICT) and the Internet. Gradually, people’s flexibility increased in terms of working hours and location [10; 11, 14].

Repeatedly, telework is being confused with remote work that refers to being able to work from a different location, anywhere outside the office premises. Remote work was previously embraced by younger generations, as Millennials (named also Generation Y, people born early 1980s to early 2000s) and Generation Z (people born late 1990s till early 2010s) who preferred flexibility regarding time schedules and location. Younger generations are the ones heavily impacted psychologically, by the Covid-19 pandemic restrictions [6; 1], while Baby Boomers (people born mid-1940s to mid-

1960s) seem to appreciate more the time at home. The reason for this unexpected difference resides in the multiple responsibilities that young workers need to balance, such as family, childcare, work, and personal commitments [1; 2; 6].

2.2 Outcomes of teleworking in Europe during the Covid-19 pandemic

According to the Eurofound Report on “Living, working and COVID-19” [1] based on a survey developed with a sample of 87,477 respondents which are workers in the EU, there have been recognized that the workforce has suddenly shifted to a new world of teleworking. As most jobs were developed on-site beforehand, the disruption in daily habits and social interaction had a big impact on employees physical and mental wellbeing, their financial situation and work-life balance. As job and financial insecurity increased drastically, the struggles of WFH involved childcare, household activities and the absence of work-life boundary, all in the same timeframe. The report highlights several important aspects regarding teleworking habits developed by people during the past months: 48% of employees worked from home fully or partially during the pandemic and by July, 78% of respondents who have been WFH declared that they would continue to work from home at least several days per week even after the pandemic, despite difficulties in managing work-life balance. Regarding job quality, 84% of respondents feel that they are doing meaningful work, while 33% of respondents feel exhausted at the end of the workday [1].

There are multiple pros and cons of teleworking, and rely on the quality of the setting, currently very hard to define, since many individual homes have become working environments. Whether it is a studio, an apartment or a house, the transformation of space and furnishing was key to overcome the challenges of WFH. Each person has become the designer of his own home office, a pleasant opportunity on the one hand and a challenge on the other hand. We are learning from the surveys that a cocktail of negative and positive feelings due to financial, occupational, or childcare issues is impacting people’s wellbeing. There are few studies though that are mentioning the importance of WFH environmental aspects, such as indoor air quality, ergonomics, spatial traits, and connection to the nature.

3 Working from home new challenges

Withing the next section, there will be analysed the ergonomic and wellbeing challenges and we will highlight several potential methods for home office optimization.

3.1 Ergonomic challenges

Management-wise, telework seems a highly effective model from productivity points of view on a short term, but the lack of interaction leads to decrease of creativity and innovation on the long run. Homes went through rapid preparative processes to accommodate inhabitants’ workspaces, as the transition was fast and had to be accomplished with as little productivity loss as possible. Internet connection, a laptop, a chair, and a table were the minimum number of items for WFH. But as months passed, improvised work settings proved insufficient to support workers’ ergonomic necessities, especially those related to back pain, headaches, and other physical conditions. The International Labour Organization recommended posture and seating solutions [12], but did not include details regarding spatial characteristics, except for mentioning the importance of finding a quiet area within the household.

3.2 Home office design challenges

Ergonomic aspects also include the planning of the interior design, furnishing and usage of space. When discussing about homes, we can only refer to residential building regulations to identify

minimal norms and certain common traits: minimal room surface (varies depending on country), minimal natural light intake (glazed surface represents 10-15% of the total floor area or 80% of the working plane should receive direct light from the sky – according to BREEAM regulations [3]) and functional scheme traits. It is a personal choice whether the home includes a designated office space.

Adaptability was mandatory to obtain functional work environments away from the office buildings, but also away from distractions and other family members. In this regard, an additional enclosed room was the ideal situation, although the tendency worldwide was to decrease the size of the homes due to high density levels in urban areas. In this case, reconfigurations of furnishing layouts were imposed to bring a certain level of practicability in terms of work to living rooms, dining rooms, bedrooms or even kitchens [14; 15].

Another aspect of identifying suitable work areas at home is the possibility to segregate functions, separate workspace from living-space, to create at least a perceptive differentiation between the two types of activities. Furthermore, natural light, acoustical insulation, layout adaptability, functional segregation are the main aspects to take into consideration when designing one's own office space at home.

3.3 People's seating challenges

Although the term was issued in direct correlation to workspace environments by the Veldhoen Company, "activity-based-work" is a contemporary design methodology that defines criteria for workplace configuration in a wide variety of spaces and experiences, that empower users to adapt the space to their own needs [7]. This definition is more accurate than ever, in choosing and adapting one's personal workspace at home.

Among the principles of activity-based-work, several practices tend to be applied in teleworking activities: alternating between multiple places and seating types depending on activity; seated/ergonomic chair for focused work; standing or bar chair for casual phone calls; soft seating or lounge chair for creative work. If space allows, it is important to switch to informal seating such as fitness ball, bean bags, etc. This practice of alternative seating involves motion, reducing completely sedentary intervals, although insufficiently to balance so many hours spent in seated position. It was being said that "seating is the new smoking" [2].

Furthermore, physical activity is an essential part of workplace design independently of its location. Sedentarism was well known as a modern life health issue and along with excluding commuting and all types of travel whether short or long, when closing sports facilities, people around the globe are increasingly living more and more sedentary lives. In this regard, active design [2] encourages movement through space, bringing a powerful argument to the seating-work correlation [1; 8; 9; 15].

3.4 Wellbeing challenges

Overall wellbeing is decreasing due to the constant struggle to maintain work-life balance and have some time away from work, causing a general fatigue among people. One factor impacting the lack of time away from work may be the absence of a daily commute. This absence means there is no natural limitation for the start and the end of the working day, to provide the time to switch off, therefore creating a negative impact on mental and physical wellbeing [14]. Another factor of impact is the loss of physical and psychological sense of separation from work, all activities being conducted within the same space. People's managers can support their teams in this regard by encouraging employees to take time out and not be permanently connected [2; 4; 8; 9; 14].

4 Proposed home office design solutions

During the last decades sustainability has been translated into architecture through building codes, regulations and most importantly, certification systems such as WELL, BREAA and LEEDS. These analyse the impact of designing the outdoor or indoor environment, through well-established criteria. Many newly built and refurbished office buildings have been configured to obtain one or more sustainability certifications, offering their inhabitants optimal air quality, low emission materials, the best filtration systems, and access to daylight, in controlled spaces. Once transferred to the residential environment, these principles become hardly controllable, as each individual home has a different design [2; 3; 10; 11].

Air pollution measurements for outdoor environments are accomplished with professional software, but nonetheless, indoor air quality should be a priority for everyone, as we spend most of our time indoors and specifically nowadays, in our homes. A newly developed consultancy program, “Fusion-spaces” [9], aims to provide support for home-based office workers in order to help them increase their environmental comfort regarding air quality and daylight, but also creating a work schedule that includes relaxation intervals.

Biophilic design [13] is a concept that increases human-nature connection through relatively simple design features, that are also applicable at home to potentially increase wellbeing. Among these is space appropriation, belonging and personalization, an aspect that should already be part of any home, whether owned or rented. The presence of family members and pets are factors that can decrease stress levels while features like window views, daylight and greenery are proven to participate in overall wellbeing. Consciously utilizing biophilic design includes rational choice of natural materials and colours, even representations of nature that could support the wellbeing [13].

Analysing the current challenges when WFH and considering the sustainability principles, we are proposing three adaptable solutions that inspire and facilitates people’s productivity in any space as illustrated in Figure 1 and 2. First, there are some minimum space requirements necessary for any working area within an apartment or a house. These spaces can be accommodated in the dining area, kitchen, living room and even bedroom. There are some optimal dimensions for the space that includes seating options and tables, as well as their position facing the light or window. Flexibility in the configuring the spaces is extremely important, as there are no standard solutions available. Second, it is recommended to use as much as possible the biophilic elements to personalize each working area and keep a high level of productivity. A Norwegian experiment using six different environmental conditions, released in 2013, showed that plants maintain attention rates and the focus on work, even if temporary these are disabled due to short relaxation periods [12]. Third, is having different seating options available. Switching between classical desk chair and more comfortable seating or even standing is recommended for facilitating the movement and changing the body position.

In any chosen layout for performing work related activities, people should make sure they have access to natural light as much as possible and a good air quality level within the space.

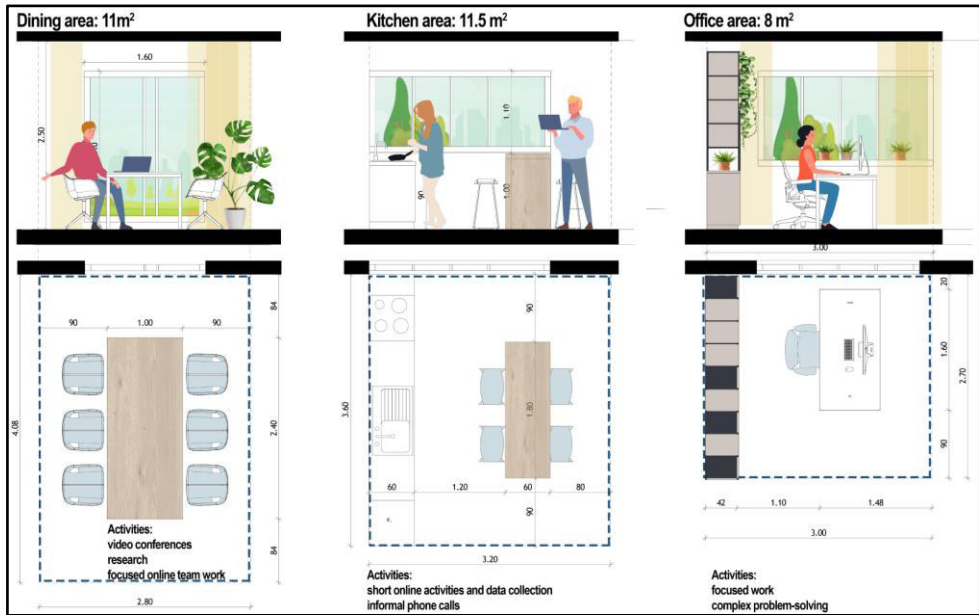


Figure 1. Adaptable solutions that inspire and facilitates people's productivity – example for dining, kitchen and an office area

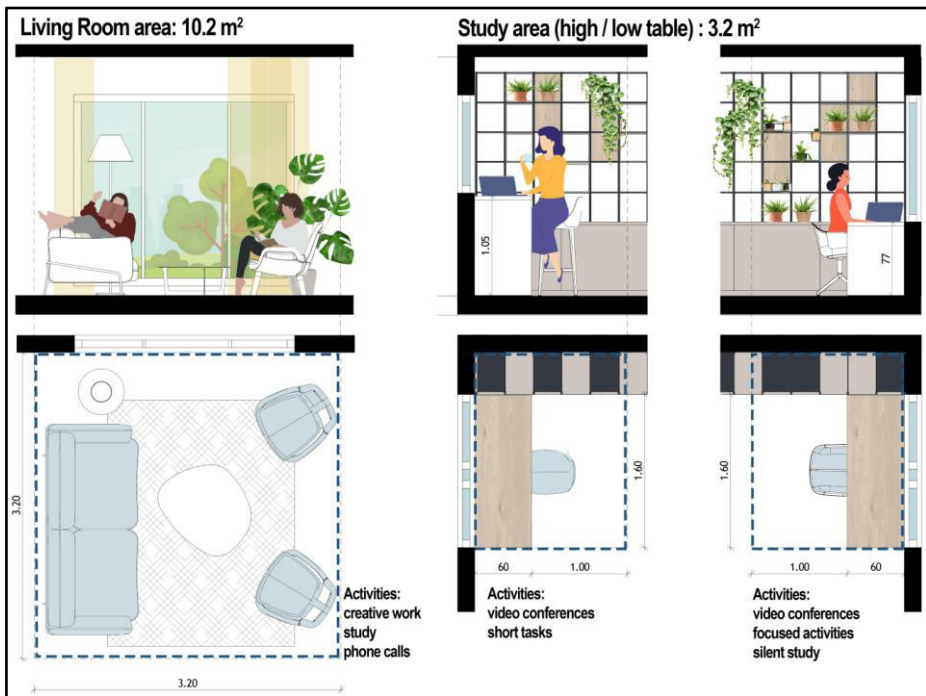


Figure 2. Adaptable solutions that inspire and facilitates people's productivity – examples for living room and study areas

5 Conclusion

Workplaces are certainly passing a challenging period due to the Covid-19 pandemic, a period that will change the ways people collaborate and interact. A hybrid workstyle that combines teleworking and on-site activities is foreseen in by experts for the near future. However, the WFH concept was prevailing in the year 2020 and forced the companies to redefine their way of collaborating and keeping employees on a high productivity level. Based on the identified challenges highlighted in this paper, the authors propose three main solutions for a home office design, with ergonomic and wellbeing boosting elements. These are addressing the minimum space requirements of a working zone, the use of biophilic elements and availability of different seating options.

Taking advantage of the already emerging design trends focused on sustainability and space efficiency, we intend to raise awareness of the importance to create a home working environment to inspire and sustain productivity.

6 References

- [1] Ahrendt, D., Cabrita, J., Clerici, E., Hurley, J., Leončikas, T., Mascherini, M. Riso, S., Sandor, E. (2020). *Living, working and COVID-19*. Retrieved from: www.eurofound.europa.eu (Access on 10-30-2020).
- [2] BETA (2016). *Active Design in Buildings*, BETA Office for Architecture and the City. Retrieved from: <https://beta-office.com/project/active-design-buildings/> (Access on 11-25-2020).
- [3] BREEAM UK (2014). Health and wellbeing. Retrieved from: https://www.breeam.com/BREEAMUK2014SchemeDocument/content/05_health/health.htm (Access on 11-15-2020).
- [4] Burow (2020). *Serendipity in quarantine part 3: In the future, how might we re-build good work habits?* Retrieved from: <https://www.linkedin.com/pulse/serendipity-quarantine-part-3-future-how-might-we-re-build-liz-burow/?trackingId=wu7hrnxpS3utDi7VxZmseA%3D%3D> (Access 10-10-2020).
- [5] Colenberg, S., Jylhä, T., & Arkesteijn, M. (2020). The relationship between interior office space and employee health and well-being—a literature review. *Building Research & Information*, 1-15.
- [6] Cushman & Wakefield (2020). *The Future of Workplace: How will COVID-19 and data shape the new workplace ecosystem?* Retrieved from: <https://www.cushmanwakefield.com/en/insights/covid-19/the-future-of-workplace> (Access on 11-16-2020).
- [7] Engelen, L., Chau, J., Young, S., Mackey, M., Jeyapalan, D., & Bauman, A. (2019). Is activity-based working impacting health, work performance and perceptions? A systematic review. *Building research & information*, 47(4), 468-479.
- [8] Evensen, K. H., Raanaas, R. K., Hagerhall, C. M., Johansson, M., & Patil, G. G. (2015). Restorative elements at the computer workstation: A comparison of live plants and inanimate objects with and without window view. *Environment and Behavior*, 47(3), 288-303.
- [9] Freeman, K. (2020). Away from the office: how to create new working environments that are happy, healthy and effective. Retrieved from: <https://www.fusion-spaces.com/wp-content/uploads/away-from-the-office-how-to-create-new-working-environments-that->

are-happy-healthy-and-effective.pdf (Access on 11-13-2020).

- [10] Gensler (2020). Insights from Gensler's U.S. Work from Home Survey 2020. Retrieved from: <https://www.gensler.com/research-insight/blog/insights-from-genslers-u-s-work-from-home-survey-2020> (Access on 11-17-2020).
- [11] Harvard Business Review (May 2020). The Implication of Working Without an Office. Retrieved from: <https://hbr.org/2020/07/the-implications-of-working-without-an-office> (Access on 11-15-2020).
- [12] ILO (2020). Ergonomic tips when teleworking, International Labour Organization. Retrieved from: https://www.ilo.org/global/about-the-ilo/multimedia/video/institutional-videos/WCMS_740265/lang--en/index.htm (Access on 11-01-2020).
- [13] Kellert, S.R., Wilson, E.O. (1993). The Biophilia hypothesis, Island Press, Washington DC,
- [14] Lagarde, C.P. (2020). Work-Life Balance: Perceived Differences of Teleworkers, dissertation thesis, University of Southern Mississippi. Retrieved from: <https://aquila.usm.edu/cgi/viewcontent.cgi?article=2827&context=dissertations> (Access on 11-15-2020).
- [15] Welz, F. W. (2010). Telework in the European Union. Retrieved from: <http://www.eurofound.europa.eu/eiro/studies/tn0910050s/tn0910050s.htm> (Access on 11-15-2020).