An Empirical Evaluation of Indoor Environmental Quality Factors' Impact on Productivity between Office- and Home-based Work Environments among Occupants with Different Genders and Ages

Xingzhou Guo,[1] and Yunfeng Chen, Ph.D.[2]

[1]Ph.D. Student, Construction Automation, Robotics, Ergonomics (CARE) Laboratory, School of Construction Management Technology, Purdue University, G293 HAMP Hall, West Lafayette, IN 47907; e-mail: guo529@purdue.edu
[2]Assistant Professor, CARE Laboratory, School of Construction Management Technology, Purdue University, Rm 443 KNOY Hall, West Lafayette, IN 47907; e-mail: chen428@purdue.edu

ABSTRACT

Since the pandemic, most work environments have changed to home-based settings which mainly serve for living purposes other than working purposes. There is no lack of studies in the impact of indoor environmental quality (IEQ) factors on occupant productivity in regular work environments; however, limited studies are conducted in home-based work environments, not to mention in the context of the COVID-19 pandemic. Therefore, an online survey was developed to explore the impact of IEQ factors on productivity between office- and home-based work environments among occupants with different genders and ages. A comprehensive list of key indicators was first developed. Then a survey was developed, distributed, and received 204 complete responses. The descriptive analysis and t-test are performed to evaluate the impact difference of all the IEQ factors on productivity of different occupants. The findings indicate that the visual factor's impact on productivity decreases for both genders, the impact of all factors on productivity for younger occupants increases when work from home (WFH), and the impact of acoustic quality is the highest among all five IEQ factors. Because of WFH as the future of work, this study can provide insights for future built environment design.