# Chapter 13
# Biospheric Reverie: Unraveling Indoor Air Quality Through Bio-Inspired Textiles, Awareness, and Decision-Making

**Rita Komalasari**
https://orcid.org/0000-0001-9963-2363
*Yarsi University, Indonesia*

## ABSTRACT

*Indoor air quality is a critical yet often overlooked facet of our daily lives. This chapter seeks to shed light on this issue, offering a unique perspective through the lens of bio-inspired textiles. This exploration aims to create awareness and empower individuals to enhance their home environments. The method involved an extensive literature study, extracting insights from biology, design, and awareness campaigns. The results revealed the transformative potential of bio-inspired textile artifacts in raising awareness and fostering a sense of well-being in participants' homes. This research contributes valuable guidelines for decision-making for bio-inspired design, marking a significant milestone in the quest for healthier and harmonious living spaces.*

## INTRODUCTION

Unbeknownst to many, a significant problem is indoor air pollution, which lurks in the dark recesses of our houses where we try to relax and unwind (Belotti et al., 2020). The air we breathe is a quiet ballet of chemical and microbiological elements that may impact our mental and physical well-being (Fu et al., 2020). It is not enough to acknowledge the difficulty; we must also have a poetic comprehension of the problem and an awareness of how it permeates every part of our lives. In order to bring about a profound awakening about the air we breathe in our sanctuaries, this investigation dives into the core of the matter by combining biology and design (Nguyen et al., 2020). Anyone concerned with or working to improve indoor air quality may benefit from the information and understanding gained from this study. Some examples are that homeowners would do well to educate themselves on indoor air quality

DOI: 10.4018/979-8-3693-2073-0.ch013

and the elements that influence it, many of which are not readily apparent. Insights from the study may help homeowners improve their living conditions, which can improve their health. Using bio-inspired design standards as a springboard, architects and interior designers may improve indoor air quality while simultaneously adding to homes' aesthetic value and atmosphere (Brebenel, 2020). Academic institutions will find the results helpful, particularly those that provide design, bio-inspiration, and environmental science courses. Curricula and teaching techniques may be shaped by the study, including the obstacles undergraduates encounter during practical application. Environmental and public health groups may use the findings to push for legislation and awareness campaigns about indoor air quality. The relationship between design, mindfulness, and well-being is explained in detail in the paper (Cuce et al., 2019). Businesses in the textile and construction material industries may improve indoor air quality with their goods by using bio-inspired design concepts. These items will serve several functions. Raising public awareness about the importance of indoor air quality for human health can only help. The study presents a story that more people can understand, urging us to all do our part to make our homes healthy (Antonov et al., 2020). When drafting rules and standards for building design and construction, experts in city planning and policymaking may consider the study's findings. Overall, this has the potential to make city dwellers' lives better. The current situation may be changed to promote healthier homes and communities by sharing the information obtained from this study with various stakeholders.

There are several essential ways in which the research advances the profession and the field: The study develops bio-inspired design concepts for better indoor air quality by modeling nest behavior after that of the mother blue tit bird. Not only does this provide a new use case for bio-inspiration in textile design, but it also enhances the discipline as a whole. To help experts in the industry incorporate features inspired by nature into their products, practical standards for bio-inspired design have been established (Abdullah et al., 2019). These guidelines give a realistic framework and actionable insights. Sustainability and health-conscious design are both advanced by this. Beyond theoretical frameworks, the research provides evidence of how bio-inspired textile objects raise consciousness and improve well-being via adoption trials in households. It encourages a new crop of ecologically aware and inventive designers by teaching them the advantages and disadvantages of bio-inspired design to improve indoor air quality (Shashwat et al., 2023). This research fills a gap by recognizing the mutually beneficial link between health and design. This interdisciplinary approach emphasizes the impact of design choices on the health and well-being of those living in buildings, contributing to a more comprehensive understanding of the constructed surroundings. Studying the challenges faced by undergraduate students in implementing bio-inspired design concepts might provide valuable insights for enhancing our pedagogical approaches. By accurately understanding how theoretical information is used in actual circumstances, you may enhance your preparation for future design assignments (Zhou et al., 2023). Experts and educators may greatly benefit from the comprehensive visual record of Bio-inspired Awareness, a physical artifact that draws natural inspiration. This is a concrete illustration of how to enhance indoor air quality by using bio-inspired design principles in a utilitarian and aesthetically pleasing manner. This study not only improves our theoretical understanding of bio-inspired design but also provides practical advice, empirical data, and pedagogical insights that contribute to the advancement of the field (Wang et al., 2022). It promotes the creation of environmentally conscious design advancements and supports using bio-inspired textiles as a viable solution for indoor air quality problems.