



Peer-Review Report Form

Manuscript Title:	Development and Functional Evaluation of an Enclosed Shoe Drying and UV-C Disinfection System for Footwear Hygiene
Type of Article:	Original Article

FIRST ROUND

Editor

<u>General Comments and Recommendations</u>
The reviewers acknowledge the significance of your manuscript and recommend several revisions to further improve its clarity, coherence, organization, and overall scholarly quality. In addition, you are advised to thoroughly review and validate all references included in the manuscript. Please ensure that all cited sources are accurate, accessible, and retrievable through Google Scholar to uphold the credibility and reliability of the study. Additionally, make sure to include the DOI or website link for every reference to facilitate verification and accessibility of sources. Furthermore, only sources that are cited within the manuscript should appear in the References section, and all entries listed in the References section must also be cited in the text. For example, if 20 unique sources are cited in the manuscript, then only those 20 sources should be included in the References section. Please note that repeated citations of the same source within the text are counted as a single reference entry; therefore, the total number of references may be lower than the total number of in-text citations.

Reviewer 1

<u>General Comments and Recommendations</u>
I commend the authors for trying to solve the common problem of drying wet shoes indoors during the rainy season, which often leads to foul odors and bacterial growth. The development of the ShoeGuard prototype as an automated drying and disinfection appliance is a very practical output.

<u>Specific Comments and Recommendations</u>
The paper states that the product development followed the ADDIE framework (Analysis, Design, Development, Implementation, and Evaluation). ADDIE is traditionally an instructional design framework used for creating educational modules and teaching materials, not for engineering a household appliance equipped with a 120W power supply, motor speed controllers, and UV-C lights. I highly suggest reframing your methodology to a standard engineering design process (like Pahl and Beitz or Ulrich and Eppinger) to make it appropriate for hardware development.



In Table 1 and Table 2, you provided target ratings for your performance indicators, such as ≥ 4.0 m/s for blower velocity, ≥ 250 $\mu\text{W}/\text{cm}^2$ for UV-C radiation intensity, and ≥ 3.00 ml/min for moisture extraction quality. However, there is no explanation, formula, or citation provided in the text to show where these baselines came from. You need to justify these numbers scientifically. Are they based on international appliance standards or previous literature? Furthermore, tracking the technical system performance over only 5 continuous independent trials is too small for a rigorous engineering paper. A higher volume of stress-testing cycles is usually required to prove long-term device reliability.

For the usability testing, the prototype was deployed to a purposive sample of only 30 household end-users in District VI of Quezon City. While this sample size is okay for a local college thesis, using 30 respondents to evaluate a Likert scale survey is generally too small to make generalized scientific claims for a journal publication. Additionally, during the evaluation phase, end-users only tested the device using standard washed canvas shoes. This is a huge limitation. What happens if the users put in leather, rubber, or synthetic running shoes? You need to either conduct tests on different shoe materials or explicitly state this as a limitation of your study in the Discussion section.

Your Discussion section mostly repeats the statistical results (such as $\text{AWM}=4.31$ for functional effectiveness and $\text{AWM}=4.37$ for operational convenience) and simply connects them to related literature. You need to explain the why and how behind the numbers. Also, the paper lacks a discussion on the limitations and safety risks of the ShoeGuard. For example, are there overheating risks when operating a 13,000-RPM internal blower in a compact $50 \times 35 \times 50.7$ cm enclosed box?

In the Introduction, you claimed that no available appliance combines a high-speed heater and a safe UV-C box into a single, easy-to-use device for shoes. This is a very bold claim because commercially, there are actually several UV shoe dryers available in the global market. You need to revise your research gap to focus on what makes your specific engineering setup scientifically novel (for example, your specific airflow mechanics, the dual-action cycle, or the structural containment) rather than claiming the combination itself is completely new.

Please indicate your recommendation by checking the appropriate box below.

<u>Decision</u>	
	Accept the manuscript for publication.
/	Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.
	Reject the manuscript, as it is not suitable for publication.

Reviewer 2

<u>General Comments and Recommendations</u>
The paper presents a practical prototype with possible value for household use. However, the main claim of UV-C disinfection is not supported by the actual testing. The study is presented as a shoe-drying and disinfection system, but the tests only measured airflow, UV-C intensity, timer accuracy, power consumption, moisture extraction, and user satisfaction.



Specific Comments and Recommendations

No microbiological test was conducted to confirm whether bacteria, fungi, or odor-causing microorganisms were reduced or eliminated. Measuring UV-C intensity alone cannot prove disinfection because effectiveness also depends on exposure dose, distance, duration, shadowed areas, and direct contact of the light with contaminated surfaces. Despite this limitation, the paper claims that the device eliminates hidden bacteria, prevents mold, removes odors, and provides complete disinfection. These conclusions go beyond the presented evidence.

Please indicate your recommendation by checking the appropriate box below.

<u>Decision</u>	
	Accept the manuscript for publication.
/	Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.
	Reject the manuscript, as it is not suitable for publication.

SECOND ROUND

<u>Decision</u>	<u>Editor</u>	<u>Reviewer 1</u>	<u>Reviewer 2</u>
Accept the manuscript for publication.	/	/	/
Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.			
Reject the manuscript, as it is not suitable for publication.			