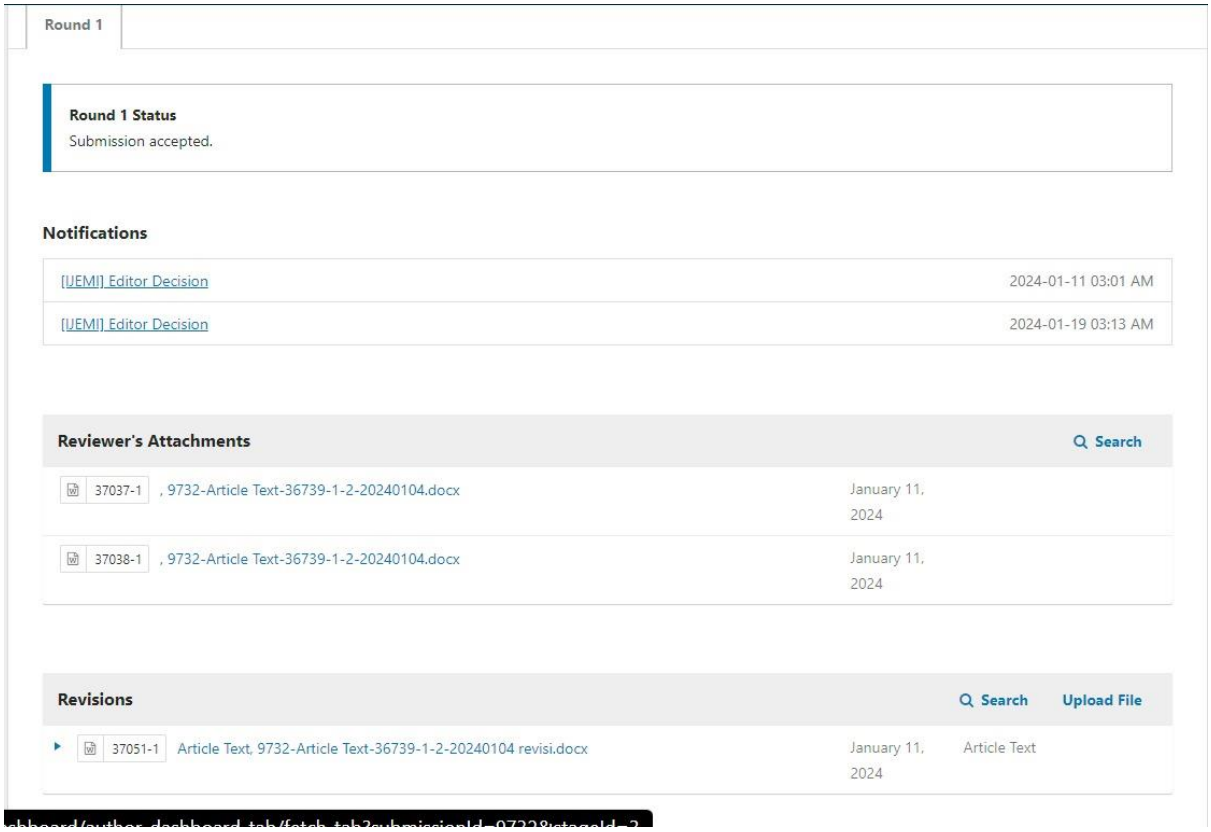
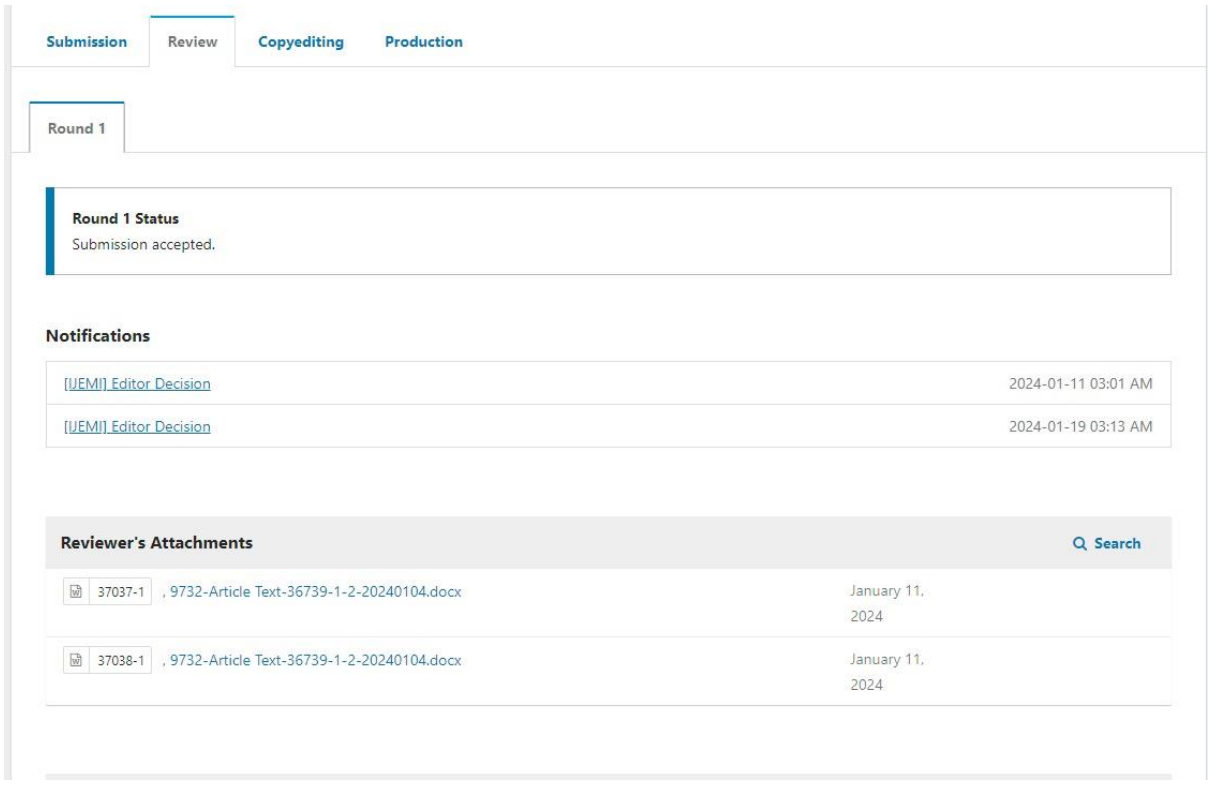
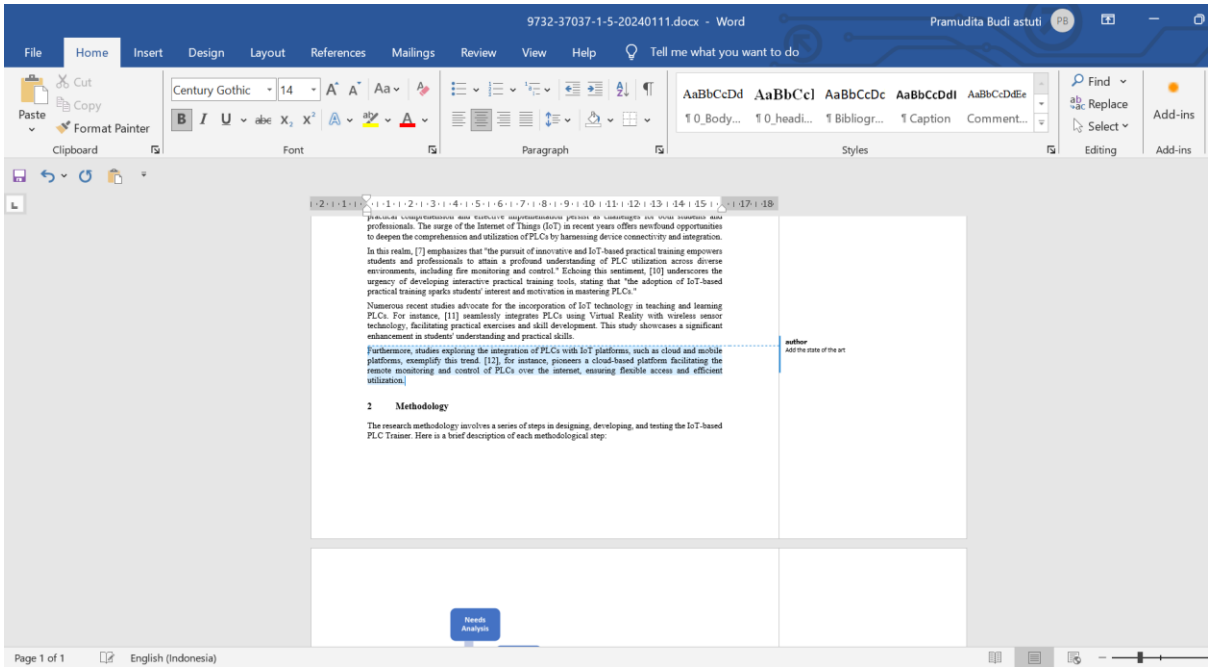
Review OJS_Development of an IoT-Based PLC Trainer Bridging the Practical Divide in Industrial Automation Education



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Furthermore, studies exploring the integration of PLCs with IoT platforms, such as cloud and mobile platforms, exemplify this trend. [12], for instance, pioneers a cloud-based platform facilitating the remote monitoring and control of PLCs over the internet, ensuring flexible access and efficient utilization.
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Add the state of the art
2 Methodology
The research methodology involves a series of steps in designing, developing, and testing the IoT-based PLC Trainer. Here is a brief description of each methodological step:
Needs Analysis
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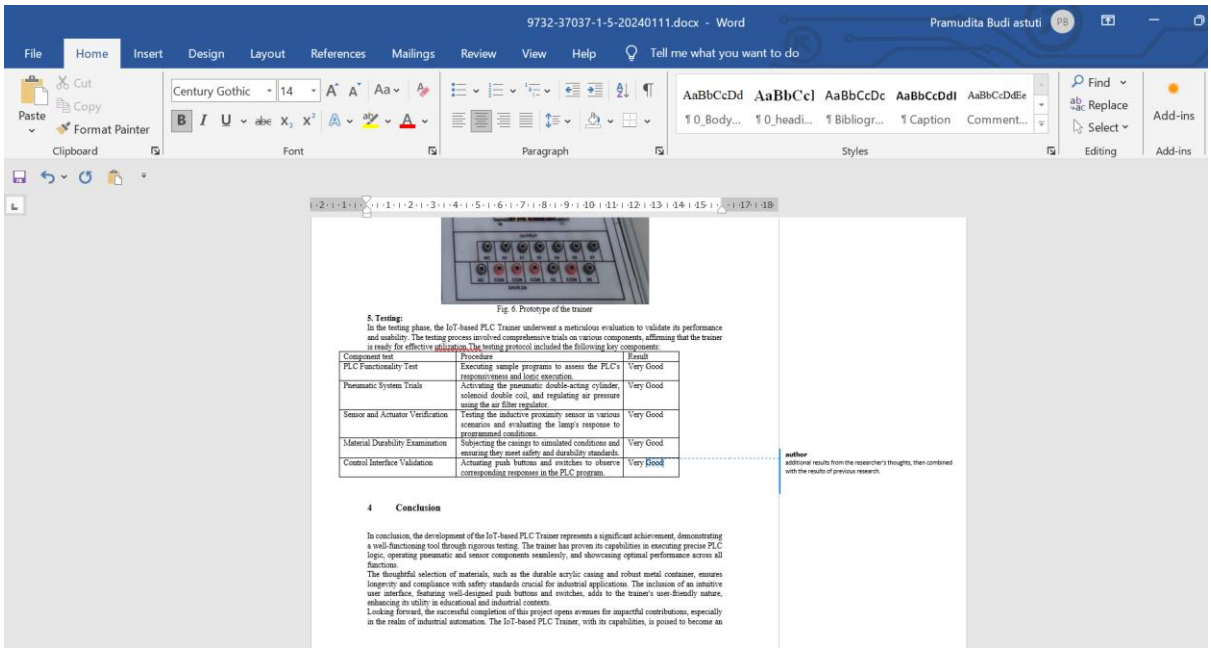
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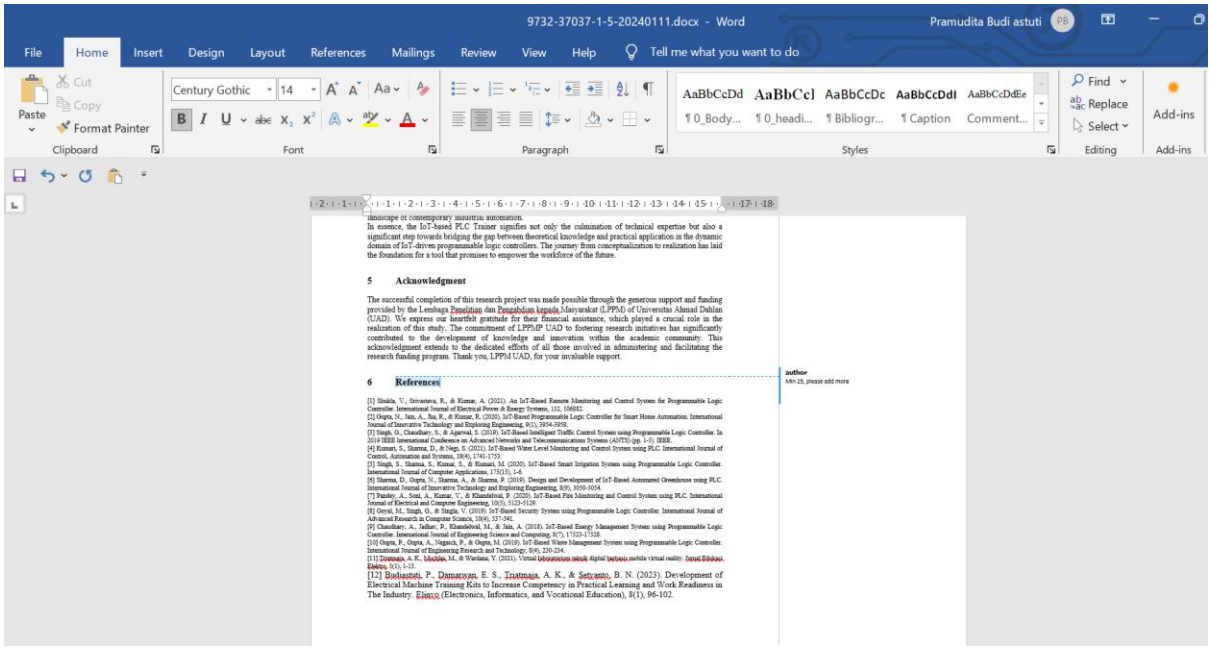
Fig. 6. Prototype of the trainer
5. Testing:
In the testing phase, the IoT-based PLC Trainer underwent a meticulous evaluation to validate its performance and usability. The testing process involved comprehensive trials on various components, affirming that the trainer is ready for effective utilization.The testing protocol included the following key components:
Component test | Procedure | Result
PLC Functionality Test | Executing sample programs to assess the PLC's responsiveness and logic execution. | Very Good
Pneumatic System Trials | Activating the pneumatic double-acting cylinder, solenoid double coil, and regulating air pressure using the air filter regulator. | Very Good
Sensor and Actuator Verification | Testing the inductive proximity sensor in various scenarios and evaluating the lamp's response to programmed conditions. | Very Good
Material Durability Examination | Subjecting the casings to simulated conditions and ensuring they meet safety and durability standards. | Very Good
Control Interface Validation | Actuating push buttons and switches to observe corresponding responses in the PLC program. | Very Good
author
additional results from the researcher's thoughts, then combined with the results of previous research.
4 Conclusion
In conclusion, the development of the IoT-based PLC Trainer represents a significant achievement, demonstrating a well-functioning tool through rigorous testing. The trainer has proven its capabilities in executing precise PLC logic, operating pneumatic and sensor components seamlessly, and showcasing optimal performance across all functions.
The thoughtful selection of materials, such as the durable acrylic casing and robust metal container, ensures longevity and compliance with safety standards crucial for industrial applications. The inclusion of an intuitive user interface, featuring well-designed push buttons and switches, adds to the trainer's user-friendly nature, enhancing its utility in educational and industrial contexts.
Looking forward, the successful completion of this project opens avenues for impactful contributions, especially in the realm of industrial automation. The IoT-based PLC Trainer, with its capabilities, is poised to become an



In essence, the IoT-based PLC Trainer signifies not only the culmination of technical expertise but also a significant step towards bridging the gap between theoretical knowledge and practical application in the dynamic domain of IoT-driven programmable logic controllers. The journey from conceptualization to realization has laid the foundation for a tool that promises to empower the workforce of the future.

5 Acknowledgment

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6 References

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