ORIGINAL ARTICLE

ENHANCING RESEARCH DISSEMINATION VIA AN EFFICIENT WEB-BASED JOURNAL MANAGEMENT SYSTEM (E-REVIEWS)

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ABSTRACT

Background/Objectives: The current manual processes of manuscript submission, screening, review, and editorial management in the Pediatric Infectious Disease Society of the Philippines (PIDSP) Journal rely heavily on email exchanges between the authors and journal manager, who acts as the liaison for the editors-in-chief (EIC) and peer reviewers. This method proves inefficient. To address this, the PIDSP Journal Editorial Team created E-REVIEWS, aimed at streamlining journal procedures to boost manuscript submissions, and ensure timely publication.

Methodology: E-REVIEWS was developed using Python as the primary computer programming language and Django as the web framework. Gitlab served as the repository and facilitated the turnover of the software requirements from developers to PIDSP website administrators. Extensive internal testing preceded the system's deployment to the PIDSP Journal website for real-world use.

Results: E-REVIEWS yielded 11 modules, each with unique functionalities including Registration/Login, Accounts Management, Dashboard, Author Submission, EIC Initial Screening, Similarity Check, Review, Revisions, Manuscript Layout, Editorial, and Help. Deployment to the PIDSP website occurred on May 13, 2024. Two manuscripts underwent screening, review, and editorial processes seamlessly through the system. Identified bugs were promptly addressed.

Conclusion: The development of E-REVIEWS hopes to revolutionize research dissemination, ensuring data privacy via its user-friendly automated online manuscript submission, peer review, and editorial process.

KEYWORDS: Medical Journal, Journal Management, Computer Programming, Philippines

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The author declares that the data presented are original material and has not been previously published, accepted or considered for publication elsewhere; that the manuscript has been approved by the author, and that the author has met the requirements for authorship.

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INTRODUCTION

The Pediatric Infectious Disease Society of the Philippines (PIDSP) Journal is the official online publication (ISSN 2782-9510) of the Pediatric Infectious Disease Society of the Philippines, a subspecialty society of the Philippine Pediatric Society. This peer-reviewed, open-access journal has been in publication since 1996. It has been indexed in the Western Pacific Region Index Medicus (WPRIM) since 2012. Each scientific article is assigned a Digital Object Identifier https://doi.org/10.56964/pidspj2017) through the CrossRef database.

The journal's primary goal is to provide Filipino clinicians with relevant and timely data essential to the recognition, diagnosis, management, and prevention of pediatric infections. Published biannually, the journal features original articles, case reports, review articles, and other forms of scientific writing. Since its inception in 1996, the journal has produced 41 issues containing 237 original articles, 20 case reports, 14 review articles, 39 feature articles, and 8 clinical practice guidelines. Over the years, the journal has guided clinicians and trainees in clinical decision-making, thus the prompt release of publications is crucial.

The Journal's manuscript submission, review, and editorial process is not automated. Most submissions are received during the annual PIDSP Convention, held every February, through a Research Contest. Voluntary submissions are also accepted throughout the year via the official PIDSP Journal Interested authors (AUs) submit their manuscripts and send a signed Author Publishing Agreement (APA) and Disclosure Form (DF). The editors-in-chief (EICs) screen the manuscripts and assign them to peer reviewers (PRs) through the Peer reviewers use a journal manager (JM). manuscript review form (MRF) to collate their comments and suggestions, which are then sent back to the editors through the journal manager. The author is informed of the review outcome, whether the manuscript is rejected or accepted, and is

requested to modify the manuscript as necessary until the article is published online. processes occur through an exchange of files via the concerned parties' personal emails. A diagram summarizing the manual PIDSP Journal workflow is seen in Figure 1.

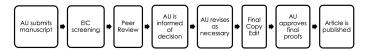


Figure 1. Manual Submission, Review, and Editorial Workflow of the PIDSP Journal

Through the years, the manual submission, and editorial process has review, increasingly difficult to manage due to the growing number of manuscripts submitted for review. The manual process is also inefficient and challenging for several reasons: (1) multiple submissions are received by the journal manager through email, (2) manuscript submissions are reviewed simultaneously but are in different stages in the workflow process (screening, peer review, revision), (3) tracking updates is difficult, (4) manuscript review and editing is time consuming, and (5) tracking statistics on reviewed manuscripts is challenging.

To address these inefficiencies, a plan to transition to a computerized system was proposed. This led the PIDSP Journal Committee to develop E-REVIEWS, a web-based manuscript submission and peer review system to improve the overall process. An automated system will enhance the efficiency of manuscript review and editorial processes, which is crucial for the timely release of relevant publications. It will increase the capacity for submissions, making more research material available for the medical community. The streamlined process, with its userfriendly interface, will encourage researchers to submit their papers for publication and reviewers to provide their appraisals more easily.

Transitioning to an online platform will be highly beneficial to authors, editors, and reviewers by saving time and effort, especially since most of the staff work on a volunteer basis. This improvement



Vol 25 No 1, pp. 4-15 January-June 2024

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will elevate the standards of Philippine journal publication to be at par with international counterparts. Overall, E-REVIEWS is expected to benefit all stakeholders through enhanced research capacity and dissemination.

E-REVIEWS aims to enhance research dissemination by creating an online platform that allows researchers to submit their work more conveniently to the PIDSP Journal and improve the online submission, review, and editorial process. Additionally, the concept of this online platform is intended to be shared (with permission) with other Philippine journals and research institutions. Specifically, E-REVIEWS aims to: (1) Develop a userfriendly automated system for online manuscript submission, peer review, and editing (2) Increase the number of manuscript submissions and the number of manuscripts undergoing simultaneous peer review and revision and (3) Aid authors, editors-in-chief, editorial board members, external peer reviewers, and the journal manager in the manuscript review and revision process by having automated reminders of due dates for tasks and allowing real-time monitoring of each manuscript's status.

MATERIALS AND METHODS

E-REVIEWS was created by the PIDSP Journal Editorial team, comprised of the two sitting Editors-in-Chief, the Journal Manager, select members of the Editorial Board, and two computer programmers.

A. Requirements Gathering

The project commenced with the determination of system requirements. During this phase, an in-depth examination of the existing processes, workflow, and protocols related to manuscript submission, review, editing, layout, and journal administration was conducted. These activities were undertaken during regular meetings involving the PIDSP Journal team and computer programmers. A literature review was done to crossverify the identified requirements against common business processes of existing journal platforms.

The data collected through these activities played a pivotal role in constructing a concepts dictionary. This document became instrumental in the subsequent development phase, particularly in creating robust data-capturing tools. These tools were specifically designed to facilitate an efficient structuring of modules, forms, and sections within the user interface (UI). Essentially, the gathered data not only provided insights into existing practices but directly informed the creation of required forms for effective data capture within the system.

B. System Design

The design phase followed thereafter. During this phase, the programming language, database schema, and the necessary software programming tools for running the system were decided upon. System workflow mapping, data flow diagram, and framework mapping were utilized to finalize the system architecture.

To establish a comprehensive repository of functional and non-functional system specifications an initial assessment involving the PIDSP Journal Editorial Team and computer programmers was conducted, along with use case validation. This process resulted in the creation of a request vault, which served as an archived list of system specifications and was referenced during the User Acceptance Testing (UAT) prior to the official release of the program.

The integration of the requirements and specifications produced a final prototype, leading to the start of the actual software development.

C. Software Development

Python was used as the primary computer programming language, and Django was used as the web framework to build E-REVIEWS.

As part of the development phase, a quality assurance plan was implemented to guarantee that the system specifications were delivered in a fit-for-purpose manner, ensuring that the system functions as intended. The testing process comprised three



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main phases: Alpha stage, Beta stage, and Release stage.

During the Alpha stage, bugs and glitches were addressed immediately in the initial stages of development. Testing and debugging were performed by the computer programmers themselves. All issues found were logged into an issue registry. After debugging, regression testing was performed by the team to verify the fixes.

In the Beta stage, collaborative testing involved the computer programmers, PIDSP Journal Editorial Team, and prospective end-users. This phase included thorough examination of functional features through peer evaluation and aimed at identifying any remaining issues or bugs requiring immediate attention. The process involved reviews by individuals not directly into the project development to ensure unbiased feedback. The Beta stage served as a critical phase in determining the readiness of the software for release and actual use.

D. Field Testing of Developed Technologies

Once all the developed requirements underwent testing and were released from development, a separate user acceptance test (UAT) was conducted by the PIDSP Journal Editorial Team. A usability test determined the system's ease of use, user-friendliness, and adaptability. Similar to the Beta stage, this test also captured user interface and functionality issues at the user level. Prior to the actual program deployment, enhancements and system refinements were implemented based on the feedback gathered during the UAT.

User acceptance testing allowed the journal team to engage with the developed software and rigorously scrutinize its features to ascertain compliance with the stipulated system requirements. This phase enabled the team to identify residual bugs that might have surfaced in the final stages of development.

The PIDSP Journal team recorded identified bugs to facilitate a streamlined tracking and monitoring process. The software development team

then methodically categorized the identified bugs based on their severity and promptly resolved the issues. Open communication lines were maintained to provide updates on bug fixes. This iterative and collaborative approach ensured prompt identification and resolution of issues to produce a robust, error-free E-REVIEWS.

System requirements were finalized in collaboration with the computer programmers and achieved through regular bi-monthly meetings to review each developed module. Each module was thoroughly checked to ensure adherence to the system requirements, with constructive feedback provided. The software developers addressed identified bugs and presented revised versions of the modules. Following a series of iterative meetings and bug resolution efforts, the alpha version of E-REVIEWS reached completion on November 21, 2023. Beta testing was completed on November 22, 2023, and the final User Acceptance Testing was completed on March 15, 2024.

E. System Turnover and Capacity Building

The final completed program was turned over to the PIDSP Journal Editorial Team and the PIDSP Website Manager and Administrator with proper endorsements and training from the system developers on April 25, 2024 through the use of Gitlab as the repository for the developed software. A technical design document was likewise provided during the turnover.

F. Maintenance

A three-month bug free warranty period after the final UAT was provided by the system developers. The initial two months of this period was maximized by the PIDSP Journal Editorial Team to identify bugs and errors that were not captured during the previous testing stages, while the final month was used for the program deployment and real-world testing.

Vol 25 No 1, pp. 4-15 January-June 2024

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G. Deployment

On May 13, 2024, E-REVIEWS was deployed to the PIDSP Journal website for real-world end-user utilization. Two researches were selected from the existing pool of submissions and the authors were invited to submit their manuscript through the online portal. The editors-in-chief, journal manager, and select reviewers were then tasked to complete the screening, review, and editorial stages of the PIDSP Journal workflow using the developed software. Comments from all end-users were collated by the journal manager and submitted to the computer programmers. Debugging was performed when necessary and the updated version of the software was made available to the PIDSP website Manager and Administrator through the Gitlab repository.

H. Dissemination of the Online System

A copy of the final technical design document was turned over to PIDSP, PCHRD, and the Philippine Association of Medical Journal Editors (PAMJE) through email correspondence. Parties interested in adapting the system for their institution may be given access to the Gitlab repository where they can download the most recent version of E-REVIEWS after the necessary permissions are obtained from PIDSP and PCHRD. Inquiries may be sent to the PIDSP Journal official email, pidsp2009@yahoo.com. Instructional videos for authors and reviewers are likewise available on the PIDSP website to ensure ease of use for interested parties.

RESULTS

The following modules were produced with unique functionalities:

A. Registration/Login Module

This module allows end-users to create new accounts, log in to existing accounts, and request for password resets. Each email address can only be used once to create an account. During registration, end-user information is requested, including email address, honorific, first name, last name, affiliation, and password as required fields. Optional fields

include address for correspondence, telephone or mobile number, middle name, and Open Researcher and Contributor Identification (ORCID). The end-user has to agree to the Terms of Use and Privacy Policy and fill in all required fields for registration to proceed. The policies were drafted by the PIDSP Journal Team with legal counsel assistance. The registration and login screens may be viewed in Figure 2.



Figure 2. (a) Registration page of E-REVIEWS, (b) Login page of E-REVIEWS

The author will receive an email confirmation upon successful registration. A second email with a link to E-REVIEWS will be sent to the author once the registration is approved by the PIDSP Journal Manager. The PIDSP Journal Manager has 24 hours to respond to new account registrations.

Returning users can access the system through the login function by providing their email and password. The login process includes a security feature in the form of a puzzle CAPTCHA, an example of which may be seen in Figure 3.

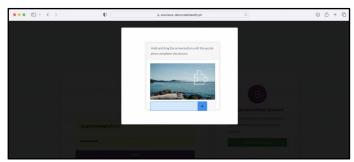


Figure 3. Security Feature (Puzzle CAPTCHA) of E-REVIEWS

B. Accounts Management Module (see Figure 4)

This module allows the journal manager and EICs to view, approve, and reject all pending registrations, view and manage all active accounts,



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assign user roles, create new accounts for end users, and reactivate or deactivate accounts upon approval of the EICs.

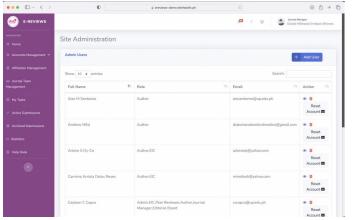


Figure 4. Accounts Management Module

C. Dashboard Module

This allows end-users to navigate the different functionalities according to their assigned roles and privileges.

General Dashboard Icons

Four icons (see Figure 5) can be manipulated at the upper right-hand corner of the dashboard namely:

- 1. Notifications (Bell icon) where users can be alerted of active submissions, pending tasks, and where all notifications are shown.
- Help (Question mark icon) where users can access a guide on how to use the program or reach out to the journal manager for assistance.
- 3. User Role (Trio icon) which defines what user role is currently accessed in E-REVIEWS. This is also where the editor and EB/PR can switch roles as authors and vice versa. When logged-in as author, an editor or EB/PR cannot edit or access his/her tasks as editor/EB/PR.



Figure 5. General Dashboard

4. Profile (Portrait icon) – where users can edit details provided during registration, change passwords, or log out of E-REVIEWS (see Figure 6).

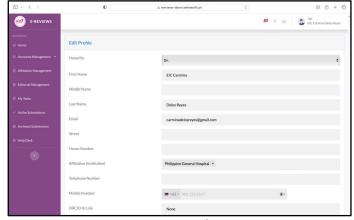


Figure 6. User Profile Page

General Dashboard Tabs

The dashboard of all end users have 3 tabs that function similarly across all account types:

1. Active Submissions Tab (see Figure 7)

This allows end-users to monitor the progress of their active submissions. Authors, reviewers, and EICs can track the stage of the submission, review, and editorial process. Additionally, the journal manager can oversee the progress and status of all active submissions. This feature enables all end-users to stay informed about the progress of their work easily.

2. Statistics Tab

The author's statistics tab displays the total number of submissions whether rejected, lost to follow up, or published. (see Figure 8). It will also display the total number of articles reviewed, rejected and approved by each EIC and reviewer. The journal manager's statistics tab will summarize the



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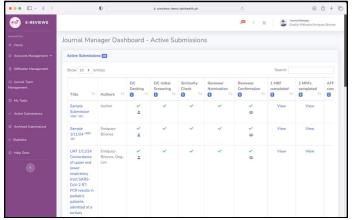


Figure 7. Journal Manager's Active Submissions Tab

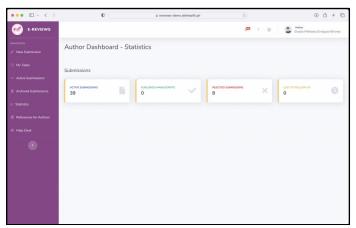


Figure 8. Author's Statistics Tab

3. Archived Submissions Tab

This tab allows for the creation of a list of previous submissions from all authors with manuscript titles and links.

Dashboard Module Types

The rest of the contents of the dashboard differ according to the user role assigned to the account.

1. Author dashboard

The author dashboard contains the following tabs which may be used to carry out author-specific functions: New Submission, My Tasks, Active

Submissions, Archived Submissions, Statistics, Help, and References for Authors. The author dashboard may be seen in Figure 9.

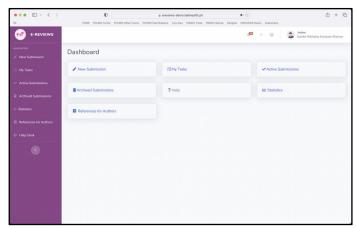


Figure 9. Author Dashboard

2. Journal Manager dashboard (see Figure 10)

The journal manager dashboard contains the following tabs which may be used to carry out administrative functions: Accounts Management, My Tasks, Active Submissions, Manuscript Layout, Archived Submissions, Statistics, and Help.

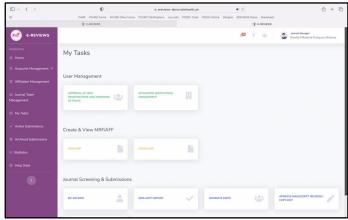


Figure 10. Journal Manager Dashboard

3. Reviewer dashboard (see Figure 11)

The reviewer dashboard was created for the internal (editorial board member) and external peer reviewers and contains the following tabs which may be used to carry out reviewer-specific functions: My Tasks, Active Submissions, Archived Submissions, and Statistics.



Vol 25 No 1, pp. 4-15 January-June 2024

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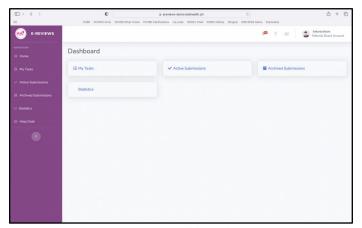


Figure 11. Reviewer Dashboard in E-REVIEWS

4. Editor-in-chief dashboard (see Figure 12)

The EIC dashboard contains the following tabs which may be used to carry out editorial and administrative functions: Accounts Management, My Tasks, Active Submissions, Editorial, Archived Submissions, Statistics, and Help.

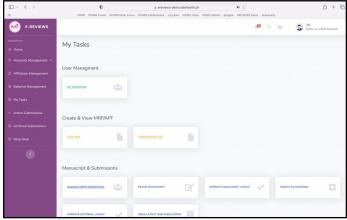


Figure 12. Editor-in-Chief Dashboard

D. Author Submission Module (see Figure 13)

This feature allows authors to submit a new manuscript by following the steps outlined below. Authors can easily access the Equator Network Checklist pertinent to their study type by clicking on the 'Learn More' icons beside each section header to guide them through each step.

- 1. Review and agree to the General Instructions to authors, which can be downloaded as a protected data file (PDF) document.
- 2. Select the type of study for submission.

- 3. Create or attach a cover letter.
- 4. Provide the title of the study.
- 5. Provide the author/s of the study.
- 6. Accomplish the Article Publishing Agreement.
- 7. Accomplish the Disclosure of Conflict of Interest Form.
- 8. Attach the abstract with a 250-word count limit and 3 keywords.
- 9. Attach the body of the manuscript.
- 10. Review and comply with the appropriate Equator Network Checklist. 1-10
- 11. Preview the manuscript.
- 12. Submit the manuscript.



Figure 13. Author Submission Module

E. EIC Initial Screening Module (see Figure 14)

This allows the editor to view, screen, reject, or accept an existing submission based on the manuscript's appropriateness and adherence to journal requirements and standards.

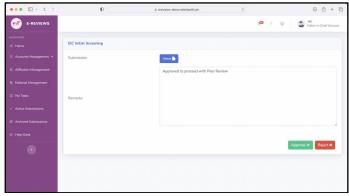


Figure 14. EIC Initial Screening Module

Vol 25 No 1, pp. 4-15 January-June 2024

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F. Similarity Check Module

This module allows the journal manager to generate a similarity check report for submitted manuscripts to identify any significant similarities with existing published literature. A similarity of 15% and below is considered acceptable, while a similarity above 25% suggests intentional plagiarism. Submissions with significant similarities are flagged, and authors are given an opportunity to revise their manuscripts accordingly. Once the submission passes the similarity check, the journal manager sends out the article for peer review. The Similarity Check screen can be seen in Figure 15.

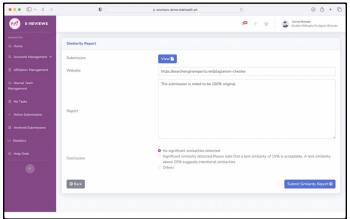


Figure 15. Similarity Check Module

G. Review Module

This module enables the editorial board member or external peer reviewers to review and provide comments on submissions decked to them through a Manuscript Review Form (MRF). The MRF screen is depicted in Figure 16a. Once two peer reviewers submit their respective MRFs, the journal manager collates all comments and suggestions in the Author Feedback Form or AFF. The AFF screen can be seen in Figure 16b. This module anonymizes both the reviewer and the author to each other's identity to reduce the risk of bias.

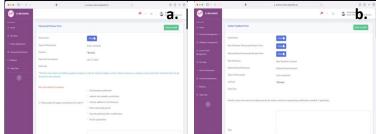


Figure 16. Review Module (a) MRF, (b) AFF

H. Revisions Module

This module allows the author and editor to view, comment on, and revise an existing submission. The Revisions Module screen can be seen in Figure 17. Within this module, manuscript editing takes place, with provisions for comments in a comments box from both the editor and author. Direct editing of the manuscript is also possible.

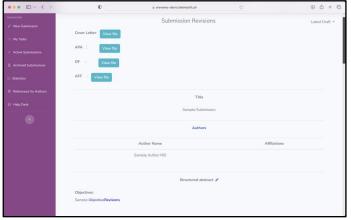


Figure 17. Revisions Module

I. Manuscript Layout Module

This module allows the journal manager to view submissions approved as final by the EIC and download the final version of the manuscript automatically formatted according to the standards of the PIDSP Journal. Additionally, it also allows the EIC and author to review and approve the final layout of the article.

J. Editorial Module (see Figure 18)

This module allows the EIC to create an editorial for an issue which can be downloaded by



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the Journal Manager for copy-editing, formatting, and layout.

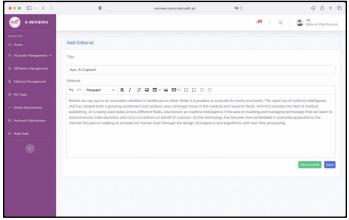


Figure 18. Editorial Module

K. Help Module (see Figure 19)

This module allows end users to submit queries to the E-REVIEWS administrators. The journal manager and EIC can then answer these queries through the same module.

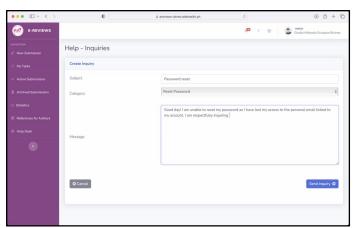


Figure 19. Help Module

End users will be reminded about tasks and deadlines through automated email alerts and in-app notifications.

DISCUSSION

E-REVIEWS aimed to create an online platform to streamline the process for researchers submitting their work to the PIDSP Journal and enhance the existing manual submission, review, and

editorial process. Recognizing that medical journal editors often have limited time due to their roles as practicing doctors, teachers, or researchers, the goal was to make the steps user-friendly and automated to expedite all processes.

The development of E-REVIEWS was meticulous and labor-intensive. While the computer programmers executed the system requirements, collaborative efforts involved extensive input from the end-users to facilitate the automation of the journal submission process. Emphasis was also placed on enhancing the program's security features to protect data privacy by implementing separation of roles for program users.

A. Journal Manager Functions

Previously, manuscript submissions were received through the PIDSP Journal email, resulting in challenges such as multiple emails for the same submission, submissions ending up in spam or junk folders, and the cumbersome management of numerous correspondences. With the implementation of E-REVIEWS, many of the functions of the Journal Manager have been automated and simplified. The platform eliminates the need for the Journal Manager to act as an intermediary between authors, editors-in-chief, and reviewers.

In the manual journal management process, final issues were formatted only when several manuscripts were available to produce an issue. The E-REVIEWS platform introduced a manuscript layout module, prompting the journal manager to create the layout of a manuscript once it is approved as final by the EIC.

B. Author Functions

In the manual process, authors received correspondences through their designated personal emails, which, similar to the Journal Manager's experience, could lead to delays in the submission, review, and editorial process if emails were missed. The current platform provides an Author Dashboard where authors can easily access new submissions,



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active submissions, archived submissions, statistics, references for authors, and help functions. To ease author submission, a dedicated module was created, resulting in a more methodical and organized workflow. Upon logging into the system, authors can access general instructions and follow a manuscript preparation checklist tailored to the type of study being submitted. Basic information such as title, author, and affiliations are required. Accomplishment of the Author Publishing Agreement (APA) and Disclosure of Conflict of Interest are accomplished within the program. Finally, authors can upload their manuscript to include all text and figure files, directly through the program.

C. Editorial Functions

Editors previously managed manuscript correspondences via their designated personal email. The current platform features an editor's dashboard comprising tabs such as My Tasks, Active Submissions, Archived Submissions, and Help. This equips editors with similar functions as the Journal Manager in accounts management.

The My Tasks Tab allows editors to screen manuscripts, nominate reviewers, approve/disapprove nominated reviewers, approve and edit author feedback forms, revise and approve manuscripts, approve manuscript layouts, create editorials, and approve issues for publication.

E-REVIEWS allowed for the creation of a program to streamline manuscript review by editors and revision by the authors through the revisions module. This feature helps track changes made by the author and allows editors to track comments throughout the process. Manuscripts undergo revisions as necessary until the final version is produced.

D. Reviewer Functions

In the manual review process, reviewers received manuscript correspondences via their designated personal e-mail. They manually sent back manuscript review forms with their input through e-

mail as well. Through E-REVIEWS, manuscripts can be assigned to a reviewer who may opt to decline or accept the review invitation. Should the reviewer decide to accept, the blinded manuscript is accessed in the system and comments on the paper are made and submitted through a manuscript review form that can be directly accomplished on E-REVIEWS.

E. Other Functions

Some added features of E-REVIEWS which will impact the journal submission process include the ability to track the progress of each manuscript in different stages of the submission process in real time, and the capacity to provide notifications on status changes of each manuscript every stage of the workflow process. Custom Email Templates for Authors, Peer Reviewers, Editors and Journal Manager are automatically sent by the system for ease of communication and these auto-generated emails are sent during paper status changes. Having automated reminders of due dates for submissions, will also allow timely submission of revised manuscripts through the program.

F. Limitations

E-REVIEWS was not able complete the development of a module to reopen previous submissions labeled as final. The program was also not able to link the system with the PIDSP Journal website to automate the publication process which currently entails the Journal Manager emailing the final layout for each article to the PIDSP website administrator. It is hoped that in the future, final manuscripts selected from the system will have a link to the journal website to facilitate direct online publication. Another development which can be targeted in the future is to obtain data on the journal's readership and impact factor as well as an automatic line numbering system to assist reviewers and editors in giving feedback.



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CONCLUSION

The development of the E-REVIEWS platform is projected to enhance research dissemination. E-REVIEWS provided improvements to the online submission, review, and editorial process of the PIDSP Journal, while maintaining data privacy, through the user-friendly automated manuscript submission, peer review, and editorial process. Through this program, researchers will be able to submit their work with ease to the PIDSP Journal. Through E-REVIEWS the number of manuscript submissions from authors and the number of manuscripts undergoing simultaneous peer review will increase further. This will be a huge improvement from the manual process submission, review, and editing that will save time for all stakeholders, consequently improving the medical publication process,

The concept of E-REVIEWS is intended to be shared for use (with permission) by other Philippine journals and research institutions, to improve the research landscape in the country.

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CONFLICT OF INTEREST

None declared.

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