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Enhancing Academic Writing in Resource-Limited Settings: A Community Service Initiative on Mendeley Adoption for Rural Papua's Students

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A R T I C L E I N F O

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A B S T R A C T

This community service program aims to address the digital literacy gap in the academic context through student capacity building interventions. The focus is on optimizing the use of reference managers as a strategic instrument in strengthening the quality of scientific paper writing. The participants of the worskhop were 20 7th semester students from the PGRI Papua Teacher Training and Education College (STKIP) (Yapen Islands Regency) from the PGSD, Biology, and Biology Education study programs. The implementation is in the form of intensive workshops for mastering Mendeley Reference Manager from reference management, integration with Microsoft Word, to automation of citation and bibliography preparation. The pre-posttest-based evaluation confirmed a significant improvement in the participants' technical understanding.

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INTRODUCTION

Reference management is a fundamental component in contemporary academic practice. Software support for this function has evolved into a standard service in global higher education institutions, reflecting its crucial role in facilitating scientific research and writing. (Williams & Woods, 2024)

However, as a developing region, Papua Province faces significant challenges in providing equal access to higher education. Infrastructure limitations such as unstable and limited internet connectivity, lack of up-to-date collections in physical libraries, and geographical isolation from science centres have widened the academic gap for its students. (R. Kmurawak et al., 2022, 2024; R. Kmurawak & Mandowen, 2021; Owen et al., 2020; Supriyadi et al., 2022) This condition poses substantial obstacles to accessing and managing research literature.

In this context, software-based reference management training, particularly open-source Reference Management Software (RMS) such as Mendeley, represents a strategic intervention. This type of training is crucial because it equips Papuan students with the tools to overcome one of the primary obstacles to academic research: efficiently managing the literature and producing scientific papers that meet academic integrity standards, despite limited resources. RMS generally serves to generate accurate references and facilitate easy conversion between different citation styles.(Singh et al., 2022) Without mastering these skills, students risk falling behind in the research process, struggle to keep up with scientific developments, and produce papers with inadequate source documentation.

Empirical evidence confirms that the primary barriers to RMS adoption in developing countries include limited infrastructure, inadequate awareness, insufficient training, and insufficient funding. (Dabengwa et al., 2019; Williams & Woods, 2024) However, research also shows that open-source or free solutions, such as Mendeley, have a higher potential for adoption. When supported by adequate training, RMS can significantly improve research efficiency and quality of academic outputs (Williams & Woods, 2024).

The benefits of Mendeley's training for Papuan students are multidimensional and directly address their specific challenges. The Offline Literature Management feature enables the creation of a structured reference database that can be accessed without dependence on a constant internet connection. Students can download and save PDF articles when the network is available, then manage, annotate, and write manuscripts offline.(Kayusi et al., 2025). It directly addresses the issue of unstable connectivity and limited access to physical libraries.

Mendeley's integration with word processors automatically generates in-text citations and bibliographies tailored to the citation style. This process significantly reduces manual errors, saves valuable time, and improves documentation accuracy (Singh et al., 2022). Mastering modern research tools such as Mendeley not only increases efficiency but also builds the confidence, digital competence, and readiness of Papuan students to participate more equally in the national and global academic communities. This empowers them to become more independent and productive researchers at the local level (Rosman et al., 2022). The research findings confirm the urgency of implementing this kind of training. Speare (2018) and Simamora (2024) Consistently identify that the leading cause of non-use of RMS is a lack of knowledge regarding the available application options, as well as the perception of the time required to teach it. These findings underscore that adequate socialisation and introduction are the initial strategic steps to improve students' academic writing efficiency and writing ability.

Therefore, the adoption of RMS such as Mendeley in the context of limited resources in Papua, despite facing unique challenges, promises transformative impacts. (Dabengwa et al., 2019). Paying attention to the digital gap and fundamental information literacy between regions in Indonesia (Rosman et al., 2022), the implementation of structured and sustainable Mendeley training for Papuan students is not only a practical step to increase individual research capacity but is also a long-term strategic investment. This investment aims to foster academic independence and close educational gaps in Disadvantaged, Frontier, and Outermost (3T) areas, ultimately contributing significantly to the development of superior and competitive human resources in Papua New Guinea.

IMPLEMENTATION AND METHODS

This training program began with a collaboration between Cenderawasih University and the STKIP PGRI Papua Teacher Training and Education College in Yapen Islands Regency, one of the districts in the 3T area. Initially, the activity was directed to the Merderka Campus Independent Learning Program. In several discussions with STKIP Papua Lecturers and Students, one of the obstacles faced by STKIP PGRI is the students' lack of readiness to use reference managers in preparing their final assignments. Based on these conditions, Ishak S Beno, Remuz MB Kmurawak, and Roy Marthen Rahanra agreed to create training for students of the task at STKIP PGRI, Yapen Islands Regency.

The activity began with preparation, during which several lecturers from Cenderawasih University prepared training materials. Meanwhile, STKIP lecturers contacted students to participate in the activity and prepared a room for its implementation. Before the training activity, we visited the location on February 2, 2024, to meet with the students and discuss the activities that would be carried out, as well as the tools that needed to be prepared, ensuring the smooth implementation of the workshop.

Figure 1. Socialisation of Activities with STKIP PGRI Papua Students

The activity consisted of an in-person workshop session featuring presentations and discussions conducted on Mendeley topics, as well as integration with Microsoft Word. Our goal with this community service initiative is to provide insight into the use of the Mendeley application, helping STKIP students work optimally on their final project. This workshop will take place on Friday, February 2, 2024, from 3:30 to 8:00 PM WIT. The speakers for this event were Remuz MB Kmurawak and Roy Marthen Rahanra. This activity initially received great enthusiasm, with 20 students from the Biology, Biology Education, and PGSD study programs in attendance.

Table 1. Rundown Workshop

No	Topics	duration
1	Introduction and Pre-Test	30 minutes
2	Microsoft Word: Essential features in the preparation of the Final Project	45 minutes
3	Mendeley: Introduction and Setup	30 minutes
4	Mendeley: Integration with Microsoft Word	30 minutes
5	Advanced Features and Tips	30 minutes
6	Workshop	30 minutes
7	Posttest and Closing	15 minutes

Table 1 presents a series of systematic stages in the implementation of the workshop, which lasts 4 hours, as follows:

1. Introduction and Pretest (30 minutes)
   a. Introduction to the importance of Mendeley and Microsoft Word in final project writing.
   b. Explanation of the purpose and benefits of the training.
   c. Sharing of training structure and content.

2. Microsoft Word: Important Settings and Features (45 minutes)
   a. Document settings: margins, orientation, paper size, etc.
   b. Use of text styles and formats: headings, subheadings, and other custom styles.
   c. Insert images, tables, and graphs into the document.
   d. Navigating between document sections and creating a table of contents.
3. Mendeley: Introduction and Setup (30 minutes)
   a. What is Mendeley, and why is it important for reference management?
   b. A step-by-step guide to creating a Mendeley account.
   c. Explore Mendeley's user interface: groups, folders, and tags.
   d. Added references to Mendeley manually and used the automatic import feature.
   e. Demonstrate how to build reference lists and manage citations.
4. Mendeley: Integration with Microsoft Word (30 minutes)
   a. Introduction to the Mendeley plugin for Microsoft Word.
   b. How to install the plugin and integrate Mendeley with Microsoft Word.
   c. Demonstration of the use of the Mendeley plugin in inserting citations and creating a bibliography.
   d. Practice exercises: Students are allowed to try inserting citations and creating bibliographies using Mendeley and Word.
5. Microsoft Word: Advanced Features and Tips (30 menit)
   a. The use of cross-referencing and indexing.
   b. Use the search and replace feature to edit documents efficiently.
   c. Tips and tricks for consistent layout and formatting setup.
6. Workshop (30 minutes)
   a. Writing exercises: Students are given time to apply the knowledge they have gained by writing or editing parts of their final project using Mendeley and Microsoft Word.
   b. Q&A session: An opportunity for students to ask questions about things they do not understand or ask for further clarification.
7. Evaluation, Post Test, and Closing (15 minutes)
   a. Assessment of students' understanding of the material taught.
   b. Feedback from students about the training.
   c. Explanations of additional resources available for those who want to deepen their knowledge of Mendeley and Microsoft Word.
   d. The training concludes and re-emphasises the importance of these skills in writing their final project and in their academic and professional careers.

With this structure and content, students will have a solid understanding of how to use Mendeley and Microsoft Word to support their final project writing efficiently and effectively.

RESULTS AND DISCUSSION

This training was attended by 20 students from three study programs, with the distribution as listed in Table 2

Table 2. Workshop Participant Profile

Department	Gender	Frequency	Percentage
Biology	M	0	0
	F	6	30
PGSD	M	7	35
	F	6	30
Biology Education	M	1	5
	F	0	0
Total		20	100

Pre- and post-tests are important tools for measuring students' understanding before and after they have studied. Pre-tests are conducted before instruction to gauge students' existing knowledge of a topic. A posttest is conducted after evaluating the knowledge and skills acquired by comparing the results with the pre-test scores, including an indirect assessment of the improvement in learning concepts and reflection on the activities undertaken. The pretest consists of 30 questions that require feedback based on participants' understanding of the Mendeley training and its integration with Microsoft Word. Point assessment is carried out by calculating the number of correct answers from each participant, then an average score is taken, which is categorized based on the study program. Information about pre- and post-test examinations is presented in Table 3.

Table 3. Pre and posttest

	Average Point	
Department	Pre Test	Post Test
Biology	9.67	8.17
Biology Education	7.00	9.00
PGSD	6.15	8.00

Table 3 shows that there was a significant increase in the level of understanding of workshop participants in the Biology Education and Elementary School Teacher Education Study Program (PGSD). However, there was a decrease in the average score among students of the Pure Biology Study Program. Further analysis revealed that this phenomenon was caused by imperfections in data collection, where four respondents did not complete the entire evaluation instrument. However, based on the questionnaire responses, most participants reported that this training provided substantial benefits in enhancing their conceptual understanding. In addition, participants also reported increased awareness of the use of relevant supporting applications to accelerate the completion of final projects more efficiently.

These findings align with previous studies that have affirmed the role of reference management software in reducing unintentional plagiarism and enhancing the efficiency of scientific paper writing.(Sujit K. Basak, 2014; Wahyuningsih, 2020) However, the effectiveness of these programs faces multidimensional challenges, including: (1) limitations of digital infrastructure, such as unstable internet connectivity, (2) low technological literacy among users, and (3) resistance to the adoption of new tools.

Figure 2. Microsoft Word and Mendeley Trainees

CONCLUSIONS AND RECOMMENDATIONS

Mendeley training is effective in improving reference management skills for students in rural areas. To achieve optimal outcomes, it is essential to address existing technical and social constraints through a multi-sectoral approach and collaboration among educational institutions, governments, and local communities. Further training can be focused on developing more integrated training models, such as integrating Mendeley training modules into the curriculum of research methodology courses and providing periodic mentoring. Additionally, another approach that can be taken is to establish peer-learning networks based on study groups, facilitating knowledge transfer in a sustainable manner, particularly for STKIP PGRI Papua students in Yapen Islands Regency.

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