

Development of a Massive Open Online Course on Reference Management

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Abstract

Background - In the digital age and increasing access to scientific information, the ability to effectively manage references is becoming an important skill for students, researchers, and academics. The development of information technology has presented various reference management software that can help users in organizing literature, automating the citation process, and minimizing errors in writing scientific papers. However, there are still many academics who have not mastered the optimal use of the application due to the limitations of training, the complexity of application features, and the limited structured learning resources.

Research Urgency - With the increasing demand for scientific publications and the need for quality academic writing, accessible and systematic learning media are needed to improve reference management competency. Massive Open Online Courses (MOOCs) offer an open, flexible, and accessible online learning environment for participants from a wide variety of backgrounds. Therefore, developing a MOOC on reference management is crucial to provide structured learning resources, enhance learning independence, and assist academics and researchers in managing citations and bibliographies more efficiently and accurately.

Research Objectives - This study aims to develop a MOOC on Reference Management.

Research Method - Utilizing the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), the research has reached the development phase. In the analysis phase, learning needs were identified through interviews with students, lecturers, and journal management practitioners. The interviews revealed that participants required a deeper understanding of reference management software, proper citation principles, and efficient reference management techniques. In the design phase, the focus was on formulating learning competencies, constructing a competency map, and designing materials and assignments that support the achievement of learning objectives.

Research Findings - The validation results indicated a very high level of validity, with a percentage of 90% for content experts and 88% for media experts, placing this MOOC in the "highly valid" category and ready for use without revision. The user trial involved students, lecturers, and practitioners, who provided positive feedback regarding accuracy, time efficiency, and cost-effectiveness.

Research Conclusion - Based on these findings, the Reference Management MOOC is recommended for implementation with ongoing evaluation and feedback to ensure its relevance and effectiveness.

Research Novelty/Contribution - The development of a MOOC specifically designed to improve reference management competency in scientific writing. This MOOC provides structured, flexible, and widely accessible learning, thus providing a more effective training alternative than conventional training.

Keywords: MOOC; reference manager; ADDIE; online course development

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INTRODUCTION

In the digital era and with increasing accessibility to information, efficient reference management has become a necessity for researchers, academics, and students (Arifianto et al., 2024). Advances in information technology have provided various reference management tools and software that help academics and practitioners better organize, store, and reference published works (Giyartiningrum et al., 2023). Reference management applications such as Mendeley, Zotero, and EndNote have become an integral part of the research work routine. The existence of reference management applications allows users to save time and reduce errors in reference management (Kristyanto, 2023). One of the main benefits of reference management applications is their ability to automate the citation and bibliography process (Utomo, 2023). Perdana (2020) emphasized that with just a few clicks, users can insert appropriate citations or bibliographies into academic manuscripts. This eliminates the burden of tedious manual tasks and potentially minimizes the risk of writing errors. Reference management applications also enable better collaboration in research (Asy'ari et al., 2023). Researchers can easily share references with colleagues and collaboratively manage relevant literature sources (Dacholfany et al., 2023). This helps improve efficiency within research teams and ensures that all team members have access to the necessary information. Efficient reference management not only simplifies organizing references but also improves research quality by minimizing writing errors and enabling better collaboration, according to Haris et al. (2023). Therefore, reference management applications have become an indispensable tool for those involved in academia and research in this digital era.

Although reference management applications have become crucial in academia, unfortunately, many academics and researchers still lack mastery of them (Asy'ari et al., 2023; Dacholfany et al., 2023; Hanum et al., 2021; Haris et al., 2023). Many reference management applications have complex interfaces and features, which can be confusing for new users. Some academics and researchers find this level of complexity overwhelming and tend to stick with manual methods, even though they are less efficient. Furthermore, there are numerous reference management applications available on the market (Izzah & Lubis, 2021), each with different characteristics and advantages (Nuraini, 2020). This can be confusing for users who are unsure which application to choose and which one best suit their needs. As a result, some academics and researchers are reluctant to start using reference management applications due to concerns about choosing the wrong one. Adequate support and training for using reference management applications are also not always available. As a result, users often must seek out learning resources and guides on their own to understand how to use the application. Despite these challenges, according to Arifianto et al. (2024), it is crucial for the academic community and educational institutions to improve understanding and acceptance of reference management applications. This could include providing better training, guidance, and technical support for researchers.

To provide adequate support and training in the use of reference management applications, one solution that can be considered is the development of a Massive Open Online Course (MOOC) on reference management. A Massive Open Online Course (MOOC) is an online education platform that can be accessed by anyone, anywhere, and at a flexible time (Dari & Taufiq, 2024; Utomo & Rosmansyah, 2020). MOOCs will provide broader access to users from various educational backgrounds and institutions. This will enable academics, researchers, and students from various levels and disciplines to acquire the knowledge and skills needed in reference management. Furthermore, MOOCs can be designed specifically for a single popular reference management application such as Mendeley. This will help overcome the problem of confusion that often arises from the multitude of available options.

MOOCs provide structured content, step-by-step tutorials, and video tutorials (Amalia, 2020), making it easier for participants to understand how to use reference management applications. Users no longer need to search for learning resources and guides scattered throughout various locations. Furthermore, MOOCs integrate exams and practical assignments, allowing participants to test their understanding and apply the skills they have learned (Saragih & Silalahi, 2024). Finally, MOOCs provide discussion forums and community support for participants, allowing them to interact, share experiences, and help each other overcome challenges.

they face in reference management. This will enable more academics to utilize these applications to improve research productivity and quality (Iksan et al., 2022).

The aim of this research is to develop a MOOC platform to enhance the reference management skills and abilities of academics and researchers and to make a meaningful contribution to the development of science and education through open access. The development of a MOOC on reference management is expected to support increased efficiency and quality of research across the academic world. The development of a MOOC on reference management is expected to significantly contribute to academics in improving the quality of their scientific article writing and publication. With good reference management skills, academics can be more efficient in managing literature, citing references, and improving the quality and validity of their scientific writing.

METHODS

Research Design

This research adopted a development approach using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009). This model was chosen because its stages provide a systematic approach to instructional development. As stated by Reiser & Dempsey (2012), the ADDIE model provides a comprehensive framework for designing and developing effective educational programs. In this research on the development of a Reference Management MOOC, the ADDIE model was applied only up to the development stage.

Data Analysis

The Analysis stage began by evaluating the needs and problems faced by academics and researchers in reference management. Data was collected through interviews with students, lecturers, and practitioners managing scientific journals to identify the most common difficulties. According to Patton (2015), in-depth interviews are an effective method for gaining a deep understanding of participants' perspectives and needs. Based on the needs analysis, the Design stage encompasses detailed planning for the development of the Reference Management MOOC. This includes curriculum development, learning material structure, and lesson plans. Furthermore, visual design and user interface aspects were considered to ensure an enjoyable learning experience. As explained by Brown & Green (2019), good design must consider pedagogical and aesthetic aspects to enhance learning effectiveness. In the Development phase, the Reference Management MOOC was created according to the planned design. Content creation included videos, reading materials, and interactive activities to produce comprehensive and informative learning materials. The MOOC was then implemented and tested by users and experts to ensure its functionality and validity before launch. According to Clark & Mayer (2023), user and expert testing is a crucial step in ensuring the quality and effectiveness of online learning.

Table 1. User Test Instrument Grid (Suyetno & Solichin, 2020)

Aspect	Indicator
Accuracy	Ability as a tool to help achieve learning indicators/objectives
	The ability to be used repeatedly
	Efficiency in relation to time
	Efficiency in relation to costs
	The MOOC developed is able to foster a spirit of independent learning.
	MOOC's ability to make participants active in learning
Ease of Use	Ease of use in learning activities
	Linguistics (the language in the media is easy to understand)

	Completeness (media presents competencies according to learning objectives)
	Clarity of content (media is easy to understand comprehensively)
	Accuracy (suitability of material in media to objectives)
	learning)
Learning Activities	Ability to trigger creativity
	Ability to create learning motivation
	Ability to help understand information

Table 2. Grid of Material Expert Validation Instruments (Sunaryo et al., 2024)

Aspect	Indicator
Material	Materials support the achievement of learning objectives
	Materials in accordance with the learning plan
	Material truth
	Teaching materials according to learner needs
	Activities and questions according to concepts and materials
Presentation	Proportional size of teaching materials
	Proportional font size
	Interesting teaching materials
	The material is presented clearly
	Logical and systematic material
	The image is well presented
	Proportional image size
	The video is well presented
	Audio can be heard clearly
Language	Assessments are presented clearly
	Language according to good and correct Indonesian language rules
	Language according to enhanced spelling (EYD)
	The terms used are in accordance with the topic of discussion.
	The language used is communicative
	The language used is straightforward and easy to understand

Table 3. Media Expert Validation Instrument Grid (Rini et al., 2023)

Aspect	Indicator
Learning Design	Learning outcomes contain aspects of attitude, knowledge and skills
	Description of content/material related to learning outcomes
	Matching learning experiences with learning outcomes
	Suitability of learning resources with material
	Suitability of assessment proposal
	Current references
Module/ Handout	Conformity of content to learning outcomes
	Content is presented systematically
	Use of clear and easy to understand language
	Use type that is easy to read
	Use of easy-to-understand illustrations, images, and tables
PowerPoint	Use of the latest references
	Conformity of content to learning outcomes
	Content is presented systematically
	Use of clear and easy to understand language

Video	Use type that is easy to read
	Use of easy-to-understand illustrations, images, and tables
	Use of the latest references
	Media quality
	Suitability of image and video illustrations with the material presented
	Clarity of images and videos displayed
	Clarity of use of sound effects and music
	Selection of text type, size and color
	Readability of text on media
	Use of good and correct language
	Clarity of words and terms used

Table 4. Likert Scale

Score	Information
1	Respondents gave a rating of "Very Poor"
2	Respondents gave a rating of "Poor"
3	Respondents gave a rating of "Enough"
4	Respondents gave a rating of "Good"
5	Respondents gave a rating of "Very Good"

Table 5. Validity Level Criteria (Akbar, 2013)

Percentage	Validity Level
85.01% - 100.00%	Very Valid (can be used without revision)
70.01% - 85.00%	Fairly Valid (can be used but needs minor revisions)
50.01% - 70.00%	Less Valid (not recommended for use as it requires major revision)
01.00% - 50.00%	Invalid (may not be used)

RESULTS AND DISCUSSION

Analysis

The analysis phase of the Reference Management MOOC development utilized interview techniques to identify learning needs, participant profiles, and learning objectives. As explained by Thomas and Brown (2011), specific learning needs must be carefully identified to design an effective and relevant educational program. Interviews were conducted with various respondents who were potential MOOC participants. The primary need identified from the interviews with respondents was an understanding and mastery of the use of Mendeley, a commonly used reference management software. Respondents expressed difficulty in managing references effectively, particularly in compiling a bibliography that complies with academic standards. Based on the interview list, the primary learning objectives of this MOOC were formulated as improving competency in using the Mendeley reference management application, understanding and applying correct citation principles, and managing references efficiently. As explained by Bloom et al. (1971), establishing clear learning objectives is key to achieving desired educational outcomes. Participants are also expected to be able to compile bibliographies that comply with various international citation styles, such as APA, MLA, and Chicago. Furthermore, they want to be able to integrate reference management into writing scientific articles, theses, and dissertations.

Interviews with prospective participants also helped identify specific topics that should be included in the course content. Proposed topics included an introduction to reference management software, software

installation and configuration, importing and exporting reference data, creating and organizing reference libraries, automated citation techniques, and reference data management. Respondents also suggested including case studies and practical examples relevant to their fields to help understand the practical applications of reference management. A comprehensive content analysis is essential to ensure that all important aspects of the learning material are covered and presented in a way that is understandable to participants (Gagné et al., 2005). Respondents also cited limited access to licensed software as a major barrier. Furthermore, there is a need to provide easy-to-follow guides for users with less technological experience. Respondents also emphasized the importance of responsive technical support throughout the course to help resolve any potential issues. Finally, interviews revealed the need for flexibility in the course schedule so that participants can effectively participate anytime and anywhere.

Design

The design phase of MOOC development focuses on the learning design that will be implemented in the course. This process begins with the formulation of learning competencies that MOOC participants are expected to possess or master. These competencies are formulated based on a needs analysis, learning objectives, and relevant academic standards. Competency formulation serves as the foundation for the development of all course elements, ensuring that each learning component is designed to support the achievement of these competencies. As stated by Dick et al. (2015), that the formulation of clear and measurable competencies is essential for creating an effective and structured learning design.

This design includes a competency structure or competency map that will be outlined in the MOOC. A competency map is an effective tool for structuring and organizing learning content, thus facilitating the efficient achievement of educational objectives (Merrill, 2002). A competency map illustrates the relationships between the various competencies that participants must master. This structure helps plan a systematic and cohesive learning flow. Each learning step supports the gradual and integrated achievement of competencies. A clear competency map allows participants to see the overall picture of the learning process and understand how each learning activity contributes to achieving the final goal.

Learning materials design is the primary focus of this stage. The materials developed include various types of content, including text, video, images, and graphics, designed to support the diverse learning styles of learners. This content should be structured systematically and logically, with engaging and interactive presentations to increase engagement and motivation. The materials design also considers instructional design principles, such as cognitive theory and multimedia theory, to ensure that information is delivered effectively and efficiently. Mayer (2009) explains that the use of cognitive theory and multimedia theory in learning design can help optimize learners' understanding and retention of information.

Exercises and assignments are the final component of MOOC learning design. Exercises are designed to provide opportunities for participants to apply the knowledge and skills they have learned. Assignments are designed to be more complex and challenging, allowing for a more in-depth assessment of participants' understanding and abilities. Exercises and assignments are relevant to the expected competencies and are designed to accurately measure competency achievement. Constructive feedback is also part of the exercises and assignments, helping participants understand their strengths and weaknesses and providing direction for improvement. As stated by Black & Wiliam (2009), effective feedback is key to improving participant performance, as it provides clear information about what has been achieved and what still needs improvement.

Table 6. Management MOOC Design Reference

Program Title	Reference Management
Credit Hours	2 credits
Description	The Reference Management program is designed to help students, researchers, academics, and practitioners understand and implement the essential principles of

		reference management. Through a series of structured modules, the program will teach participants how to use the Mendeley reference management tool to efficiently organize, store, and cite sources. The program also emphasizes the importance of ethical citing and avoiding copyright infringement, thereby enhancing academic integrity.			
Learning Outcomes		After completing the entire series of Reference Management MOOC programs, participants are expected to be able to install reference management applications and manage references both independently and collaboratively.			
Session	Topic	Module	CP Module	Media	Evaluation
1	The Importance of References	Module 1: Meaning & Reference Meaning Module 2: Citation Techniques, Footnotes and Body Note Module 3 Misappropriation of Written Works and Copyright Infringement	Able to explain the meaning and significance of references Able to explain citation techniques, footnote, and body note	Presentation Materials and Video	Practice and Formative Test
2	Reference Management Application	Module 1: Use of Reference Management Applications and Reference Management Module 2: Using Citations Using Reference Management Applications	Able to explain the use of reference management applications and reference management Able to explain the use of citations using reference management applications	Presentation Materials and Video	Practice and Formative Test
3	Reference Management Application Installation	Module 1: Zotero and Mendeley Application Installation Module 2: EndNote Application Installation	Able to install Zotero and Mendeley applications Able to install the endnote application	Presentation Materials and Video	Practice and Formative Test
4	Reference Input	Module 1: Digital Reference Module 2: Reference Input	Able to perform digital reference searches Able to do reference input	Presentation Materials and Video	Practice and Formative Test
5	Desktop Version Reference Management	Module 1: Connector Installation and Plugin Installation Module 2: Integration into Word Processor	Able to perform connector installation and plugin installation Able to integrate reference management applications into word processors	Presentation Materials and Video	Practice and Formative Test
6	Reference Management (Mendeley) Website Version	Module 1: ID Registration and Login Module 2: Reference File Management	Able to register ID and login Able to manage reference files	Presentation Materials and Video	Practice and Formative Test

7	Citation and Bibliography	Module 1: Managing Bibliography and Citation Techniques Module 2: Navigating References and Collaborating in Groups	Able to manage bibliography and citation techniques Able to navigate references and create collaborations in groups	Presentation Materials and Video	Practice and Formative Test
Competence Test					

Development

The MOOC development phase includes several important steps to ensure the quality and effectiveness of the learning materials. The initial phase involves creating video content, reading materials, and evaluation instruments used to measure participant understanding. Video content is created with engaging visual and audio aspects in mind to increase participant engagement and motivation. Reading materials are structured systematically and logically to ensure information is presented clearly and easily understood. Evaluation instruments are designed to include various forms of assessment, ranging from multiple-choice tests to assignments, allowing for a comprehensive assessment of student understanding. The use of these various forms of evaluation helps to more comprehensively measure various aspects of student understanding and skills (Anderson et al. et al., 2005).

The next stage is the media and content expert review. At this stage, the prepared material is validated by media and content experts to ensure that the content meets established quality standards. The media expert review focuses on visual and technical aspects, ensuring that all media elements, such as videos, images, and graphics, are well-presented and adhere to good design principles. The content expert review evaluates whether the material aligns with educational theory and best practices and ensures that the learning flow is logical and supports the desired learning objectives. Expert evaluation is a crucial step in ensuring that learning materials are effective and high-quality before being delivered to participants (Morrison et al., 2013).

After validation by media and content experts, user trials were conducted on a small scale or in small groups. Reeves & Hedberg (2003) stated that user trials are a crucial step in ensuring that learning materials are acceptable and effective for the target audience. These trials involved students, lecturers, and journal management practitioners to test the ease of use and readability of the content. Students provided feedback regarding their learning experiences, including how they interacted with the content and media presented. Lecturers evaluated the material's suitability to learning objectives and provided suggestions for improvement. Journal management practitioners provided practical perspectives on the material's relevance to field needs. The results of these trials were used to refine and refine the material before wider implementation.

Table 7. Media Expert Validation Results

Aspect	Indicator	Score
Learning Design	Learning outcomes contain important aspects	5
	Description of content/material related to learning outcomes	4
	Matching learning experiences with outcomes	4
	Suitability of learning resources with material	4
	Suitability of assessment proposal	4
Module/ Handout	Conformity of content to learning outcomes	4
	Content is presented systematically	5
	Use of clear and easy language	4
	Use type that is easy to read	4

PowerPoint	Use of illustrations, images and tables	4
	Use of the latest references	5
	Conformity of content to learning outcomes	4
	Content is presented systematically	5
	Use of clear and easy language	4
	Use type that is easy to read	4
	Use of illustrations, images and tables	4
	Use of the latest references	5
Video	Media quality	5
	Conformity of image and video illustrations	4
	Clarity of images and videos displayed	5
	Clarity of use of sound effects and music	4
	Selection of text size and color	5
	Readability of text on media	5
	Use of good and correct language	5
	Clarity of words and terms used	5
Total Score		111
Average		4.4
Percentage		88%

Validation results from media experts indicate that the developed teaching materials have a very high validity level of 88%. This means the teaching materials fall into the Very Valid category and can be used without revision. Several reasons support this finding. First, the content of the teaching materials aligns with the expected learning outcomes. This means that what is conveyed in the teaching materials aligns with the learning objectives. Anderson & Krathwohl (2001) emphasize that the alignment between content and learning outcomes is crucial to ensuring the learning process runs effectively and meets students' needs. Second, the systematic presentation of content in the teaching materials significantly helps students understand the material in a more structured and logical manner. This organized presentation supports a more efficient and effective learning process (Reigeluth, 2013). Systematically arranged modules/ handouts and PowerPoint presentations allow MOOC participants to follow the learning flow more easily. A good structure in content presentation helps participants understand and remember information better, which is crucial in the teaching and learning process.

Furthermore, the use of clear and easy-to-understand language in teaching materials plays a crucial role in the learning process. Clear and simple language makes it easier for participants to grasp the concepts taught without confusion (Sweller, 2011). This also reduces participants' cognitive load, allowing them to focus more on understanding the material rather than trying to comprehend the language used. Good and correct language is an important indicator in the validation of teaching materials, as clear language facilitates understanding and effective communication. Furthermore, the quality of media used in teaching materials, such as videos and PowerPoint presentations, is highly rated. The clarity of images, videos, and sound effects increases participant interest and motivation, and helps visualize complex concepts (Mayer, 2009). High-quality media allows MOOC participants to more easily understand the material because they can see and hear the information clearly. Furthermore, the use of appropriate and effective media can increase participant interaction with the teaching materials, ultimately improving learning outcomes.

Finally, the use of the latest references in the teaching materials ensures that the material presented is up-to-date and relevant to developments in the Mendeley reference management application. This is crucial for maintaining the credibility and accuracy of the information provided to participants (Johnson, 2020). The latest references reflect the latest research and findings, which is crucial in the ever-evolving world of education. Teaching materials with the latest references are not only accurate but also relevant to current learning contexts and needs. Overall, the highly valid results of the media expert validation test for these teaching materials indicate that various aspects such as content suitability, systematic presentation, clear language use, media quality, and the use of the latest references have been successfully met. These factors contribute significantly to the high level of validity of the teaching materials, so they can be used without further revision. This high validation score reflects that the teaching materials in the Reference Management MOOC development have been very well designed and structured, meeting the quality standards required to support an effective and efficient learning process.

Table 8. Results of Material Expert Validation

Aspect	Indicator	Score
Material	Materials support the achievement of learning objectives	5
	Materials in accordance with the learning plan	5
	Material truth	5
	Teaching materials according to learner needs	4
	Activities and questions according to concepts and materials	4
Presentation	Proportional size of teaching materials	4
	Proportional font size	4
	Interesting teaching materials	5
	The material is presented clearly	5
	Logical and systematic material	5
	The image is well presented	4
	Proportional image size	4
	The video is well presented	5
	Audio can be heard clearly	4
	Assessments are presented clearly	4
Language	Language according to good and correct Indonesian language rules	5
	Language according to enhanced spelling (EYD)	5
	The terms used are in accordance with the topic of discussion.	4
	The language used is communicative	4
	The language used is straightforward and easy to understand	5
Total Score		90
Average		4.5
Presentation		90%

Validation by material experts achieved a validity level of 90%, indicating that the material meets high quality standards. This level of validity confirms that the material strongly supports the learning objectives and can be used without further revision. This aligns with findings from previous studies that indicate that the validity of learning materials is a key factor in the success of online learning processes. Allen & Seaman (2013) stated that material validity is a critical element that influences the quality and outcomes of online learning. The validity of learning materials significantly influences the effectiveness of online learning, where valid materials can increase the understanding and engagement of MOOC participants.

The content aspects of this MOOC received high ratings from subject matter experts, indicating that the content presented was aligned with the learning objectives and participants' needs. Appropriate and relevant content is crucial in online learning, especially in MOOCs, which typically have diverse audiences. Content quality is one of the main determinants of MOOC success, where relevant and appropriate content can increase participant motivation and engagement. Swan (2003) suggests that content relevance and quality are key factors in motivating and engaging learners in online learning. Therefore, these high validation results indicate that the development of the Reference Management MOOC has great potential to provide an effective learning experience for participants.

In terms of presentation, this MOOC also demonstrated excellent results. Logical, systematic, and engaging presentation of material is a crucial factor in online learning, helping participants better understand the material. Good presentation, including the appropriate use of visuals and multimedia, can improve comprehension and retention of material in online learning. Mayer (2009) stated that the appropriate use of visuals and multimedia in presenting material can significantly improve participants' comprehension and retention of information. The validation results, which showed a high score in the presentation aspect, indicate that this MOOC was designed with effective learning design principles in mind.

The language aspect also received excellent reviews from subject matter experts. The use of clear, straightforward, and communicative language is crucial in ensuring students understand the material well. The language used in the learning materials is structured in a simple and easy-to-understand manner to avoid confusion and ensure that the message is well received by students. Mayer (2009) stated that the use of simple and clear language in learning materials can significantly improve students' understanding and retention of information. High validation in the language aspect indicates that this MOOC material meets these standards, thus helping participants understand the content more effectively.

Overall, the expert validation results indicate that the MOOC materials are of excellent quality and ready for use in the learning process. The high level of validity indicates that the materials are well-designed, addressing learning needs, and adhering to academic guidelines. This MOOC is expected to significantly benefit participants in understanding and effectively managing references.

Table 9. User Test Results

Aspect	Indicator	Score		
		Student	Lecturer	Practitioner
Accuracy	Ability as a tool to achieve learning objectives	4	4	4
	The ability to be used repeatedly	5	5	5
	Efficiency in relation to time	4	4	5
	Efficiency in relation to costs	5	5	5
	The MOOC developed is able to foster enthusiasm for learning	4	4	5
	MOOC's ability to make participants active in learning	4	5	5
Ease of Use	Ease of use in learning activities	5	5	5
	Linguistics	4	4	4
	Completeness	4	5	5
	Clarity of material content	4	5	5
	Accuracy	5	5	5
Learning Activities	Ability to trigger creativity	3	4	4
	Ability to create learning motivation	4	5	5
	Ability to help understand information	4	5	5
Total Score		60	59	65

Average	4.3	4.2	4.6
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The results of the small-group user trials received positive feedback from all respondents. Students, lecturers, and practitioners gave good to excellent ratings across the various aspects tested. Positive user feedback is an important indicator of the success of an online learning program, as it demonstrates that the material presented meets needs and expectations. Allen & Seaman (2016) stated that positive user feedback is an indicator that an online learning program is effective in achieving learning objectives.

The accuracy aspect received an excellent rating, particularly for the reusability indicator. This indicates that the material in this MOOC is considered highly relevant and can be used repeatedly without losing its effectiveness. The ability to reuse learning materials effectively is an important indicator of the quality and sustainability of an online course. This rating indicates that the materials in this MOOC are well-designed to support ongoing learning. Wiley (2007) stated that the reusability of learning materials is one of the main criteria for determining the long-term quality and effectiveness of online courses.

Efficiency also received high ratings, both in terms of time and cost. Bates (2015) stated that efficiency in online learning involves optimal use of time and resources to achieve maximum learning outcomes. Time efficiency indicates that the material is delivered in a way that minimizes participant time wastage, while cost efficiency indicates that the MOOC is perceived as providing good value at a low cost. Efficiency in online learning is a key factor influencing participant satisfaction and learning outcomes. These results indicate that the development of the Reference Management MOOC successfully achieved the desired efficiency.

Feedback from lecturers and practitioners also indicates that this MOOC is of high quality in terms of accuracy and efficiency. Reeves & Hedberg (2003) stated that input from a wide range of potential participants or users is essential in the evaluation process to ensure that the online learning program meets the needs and expectations of all parties involved. This is important because it involves perspectives from practitioners with direct experience in journal management, as well as lecturers who understand pedagogical needs. The results of this trial indicate that this MOOC has successfully met the high expectations and standards of various parties.

Overall, the user trial results received very positive feedback. The materials and media used in this MOOC were deemed excellent and ready for use in the learning process. This positive response reassures participants that this MOOC will be effective in helping participants understand and manage references effectively. et al. (2009) stated that continuous evaluation and feedback from end users is key to maintaining the relevance and effectiveness of learning materials in the long term.

CONCLUSION

This study shows that the Reference Management MOOC has a very high level of validity, both in terms of content and media. The validation results from material experts and media experts indicate a validity percentage in the very good category, placing this MOOC program and can be used without further revision. The logical, systematic, and engaging presentation, as well as the use of clear and communicative language, have proven effective in improving understanding and retention of the material. Furthermore, user trials involving students, lecturers, and journal management practitioners also provided very positive responses, with ratings ranging from good to excellent for aspects of accuracy, time efficiency, and cost efficiency. The positive responses from students, lecturers, and practitioners indicate that this course meets pedagogical and practical expectations and needs. Based on these findings, this Reference Management MOOC program can be implemented in the learning process by continuously conducting evaluations and feedback from end users to ensure the material remains relevant and effective in supporting the learning process. Furthermore, further research can focus on developing interactive and adaptive features in the MOOC to further enhance student engagement and learning outcomes.

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REFERENCES

- Akbar, S. (2013). Instrumen Perangkat Pembelajaran (A. Holid (ed.). Bandung: Remaja Rosdakarya.
- Alessi, S. M., & Trollip, S. R. (2001). *Multimedia for learning: Methods and development* (3rd ed.). Allyn & Bacon.
- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Sloan Consortium.
- Allen, I. E., & Seaman, J. (2016). *Online report card: Tracking online education in the United States*. Babson Survey Research Group.
- Amalia, Y. S. (2020). *Dasar-dasar Pengenalan tentang Massive Open Online Course (MOOC)*. Airlangga University Press.
- Anderson, H. M., Moore, D. L., Anaya, G., & Bird, E. (2005). Student Learning Outcomes Assessment: A Component of Program Assessment. *American Journal of Pharmaceutical Education*, 69(2). <https://doi.org/10.5688/aj690239>
- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Allyn & Bacon.
- Arifianto, T., Syafii, M., Febrian, W. D., Sani, I., Wajnah, W., & Nainggolan, H. (2024). Pelatihan Penulisan Artikel Ilmiah Terindeks Scopus Berbantu Aplikasi Mendeley. *Community Development Journal: Jurnal Pengabdian Masyarakat*, 5(1), 121-128.
- Asy'ari, M., Ikhsan, M., Imran, A., Mirawati, B., Firdaus, L., Fitriani, H., & Azizah, I. F. (2023). Pelatihan Manajemen Referensi dan Sitasi Menggunakan Aplikasi Zotero untuk Penulisan Proposal Riset Eksakta pada Program Kreativitas Mahasiswa. *Sasambo: Jurnal Abdimas (Journal of Community Service)*, 5(2), 467-480. <https://doi.org/10.31004/cdj.v5i1.24150>
- Bates, A. W. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. Tony Bates Associates Ltd.
- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university: What the student does* (4th ed.). McGraw-Hill Education.
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5-31. <https://doi.org/10.1007/s11092-008-9068-5>
- Bloom, B. S., Hastings, J. T., & Madaus, G. F. (1971). *Handbook on formative and summative evaluation of student learning*. McGraw-Hill.
- Branch, R. M. (2009). *Instructional design: The ADDIE approach* (Vol. 722). New York: Springer.
- Brown, A. H., & Green, T. D. (2019). *The essentials of instructional design: Connecting fundamental principles with process and practice* (4th ed.). Routledge.
- Clark, R. C., & Mayer, R. E. (2023). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. John Wiley & sons.
- Dacholfany, M. I., Sudyana, I. N., Roza, N., Bakri, A. A., Litamahuputty, J. V., & Al Haddar, G. (2023). Pelatihan Penggunaan Aplikasi Mendeley Secara Online Untuk Penyusunan Daftar Pustaka Karya

- Ilmiah. *Community Development Journal: Jurnal Pengabdian Masyarakat*, 4(2), 3784-3790. <https://doi.org/10.31004/cdj.v4i2.15543>
- Dari, W., & Taufiq, A. M. (2024). Inovasi Sistem Pembelajaran Daring Berbasis Massive Open Online Course (MOOC) Universitas Padjadjaran Pada Pertukaran Mahasiswa Merdeka 2. *BEGIBUNG: Jurnal Penelitian Multidisiplin*, 2(2), 25-32. <https://doi.org/10.62667/begibung.v2i2.86>.
- Dick, W., Carey, L., & Carey, J. O. (2015). *The systematic design of instruction* (8th ed.). Pearson.
- Fry, H., Ketteridge, S., & Marshall, S. (2009). *A handbook for teaching and learning in higher education: Enhancing academic practice* (3rd ed.). Routledge.
- Gagné, R. M., Wager, W. W., Golas, K. C., & Keller, J. M. (2005). *Principles of instructional design* (5th ed.). Wadsworth/Thomson Learning.
- Giyartiningrum, E., Prasetyo, H., & Kurnianingsih, R. (2023). Meningkatkan Efektivitas Penulisan Tugas Akhir dan Karya Ilmiah Melalui Pelatihan Manajemen Referensi Menggunakan Aplikasi Mendeley. *J-ABDI: Jurnal Pengabdian kepada Masyarakat*, 3(3), 649-656. <https://doi.org/10.54259/pakmas.v5i1.3211>
- Hanum, A. N. L., Sahidi, S., Madeten, S. S., Amir, A., & Rahman, M. (2021). Pelatihan Manajemen Referensi: Strategi Menghindari Aksi Plagiarisme Di Kalangan Mahasiswa Menggunakan Zotero. *Dharmakarya: Jurnal Aplikasi Ipteks Untuk Masyarakat*, 10(4), 307-313. <https://doi.org/10.24198/dharmakarya.v10i4.35127>
- Haris, I., Kusumarini, E., Zagoto, S. F. L., Kusumawati, I., & Arifudin, O. (2023). Pengenalan Teknis Penggunaan Software Turnitin Dan Mendeley Dekstop Untuk Meningkatkan Kualitas Karya Ilmiah Mahasiswa Baru. *Journal Of Human And Education (JAHE)*, 3(2), 172-178. <https://doi.org/10.31004/jh.v3i2.187>
- Iksan, M., Irwan, I., Samritin, S., Alzarliani, W. O., & Lawelai, H. (2022). Pelatihan Sitasi Dan Manajemen Daftar Pustaka Menggunakan Software Mendeley Untuk Meningkatkan Kualitas Karya Tulis Ilmiah. *Journal of Community Empowerment*, 1(1), 7-12. <https://doi.org/10.31764/joce.v1i1.9505>
- Izzah, N., & Lubis, R. H. (2021). Pelatihan Pemanfaatan Manajemen Referensi Zotero. *Jurdimas (Jurnal Pengabdian Kepada Masyarakat) Royal*, 4(3), 239-246. <https://doi.org/10.33330/jurdimas.v4i3.1042>
- Johnson, B. (2020). *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules*. Morgan Kaufmann.
- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2016). *Kirkpatrick's four levels of training evaluation*. ATD Press.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8th ed.). Routledge.
- Kristyanto, D. (2023). *Perangkat Lunak Perpustakaan: dari Konsep Sampai Implementasinya di Perpustakaan*. Azyan Mitra Media.
- Laurillard, D. (2012). *Teaching as a design science: Building pedagogical patterns for learning and technology*. Routledge.
- Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.
- Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development*, 50(3), 43-59. <https://doi.org/10.1007/BF02505024>
- Morrison, G. R., Ross, S. J., Morrison, J. R., & Kalman, H. K. (2019). *Designing effective instruction*. John Wiley & Sons.
- Nuraini, M. W. (2020). Analisis Perbandingan Aplikasi Manajemen Referensi Zotero 5.0. 66. dan Endnote X9. *Publication Library and Information Science*, 3(2), 80-86. <https://doi.org/10.24269/pls.v3i2.2112>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.
- Perdana, F. J. (2020). Pelatihan Membuat Daftar Pustaka Otomatis Dengan Aplikasi Mendeley Desktop Bagi Mahasiswa Dalam Persiapan Penyusunan Tugas Akhir. *Dimasejati: Jurnal Pengabdian Kepada Masyarakat*, 2(1), 75-93. <https://doi.org/10.24235/dimasejati.v2i1.6652>

- Reeves, T. C., & Hedberg, J. G. (2003). *Interactive learning systems evaluation*. Educational Technology Publications.
- Reigeluth, C. M. (2013). *Instructional-design theories and models: A new paradigm of instructional theory, Volume II*. Routledge.
- Reiser, R. A., & Dempsey, J. V. (2012). *Trends and issues in instructional design and technology*. Pearson.
- Rini, D. R., Wisesa, A. M., & Arizal, F. W. (2023). MOOC (Massive Online Open Courses): Cara membuat batik. *Prosiding Seminar Nasional Industri Kerajinan dan Batik* (pp. C10–C15). <https://doi.org/10.55626/snkb.v5i1.246>
- Saragih, S. P., & Silalahi, M. (2024). Pengembangan Learning Management System berbasis Web menggunakan konsep MOOC. *Jurnal Desain Dan Analisis Teknologi*, 3(1), 15-21. <https://doi.org/10.58520/jddat.v3i1.42>
- Sugihartini, N., & Yudiana, K. (2018). ADDIE sebagai model pengembangan media instruksional edukatif (MIE) mata kuliah kurikulum dan pengajaran. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 15(2). <https://doi.org/10.23887/jptk-undiksha.v15i2.14892>
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50(4), 1183-1202. <https://doi.org/10.1016/j.compedu.2006.11.007>
- Sunaryo, N. A., Nurmalasari, R., Saputri, A. M., & Prasetyo, A. R. (2024). Digitalisasi Kursus Produksi Patiseri Berbasis MOOC di Universitas Negeri Malang. *Education Journal: Journal Educational Research and Development*, 8(1), 143-150. <https://doi.org/10.31537/ej.v8i1.1655>
- Suyetno, A., & Solichin, W. (2020). Pengembangan Massive Open Online Courses (MOOCs) pada Materi Pengelasan. *Jurnal Teknik Mesin Dan Pembelajaran*, 2(2), 141. <https://doi.org/10.17977/um054v2i2p141-152>
- Sweller, J. (2011). Cognitive load theory. In J. P. Mestre & B. H. Ross (Eds.), *Psychology of learning and motivation* (Vol. 55, pp. 37–76). Academic Press. <https://doi.org/10.1016/B978-0-12-387691-1.00002-8>
- Thomas, D., & Brown, J. S. (2011). *A new culture of learning: Cultivating the imagination for a world of constant change*. CreateSpace.
- Utomo, P. P. (2023). Penggunaan Mendeley dalam Meningkatkan Kualitas Penulisan Skripsi Mahasiswa Program Studi Administrasi Publik Universitas Sembilanbelas November Kolaka. *Journal Publicuho*, 6(3), 839-850. <https://doi.org/10.35817/publicuho.v6i3.204>
- Utomo, R. G., & Rosmansyah, Y. (2020). Framework untuk Mendesain Sistem Massive Open Online Courses (MOOCs) untuk Universitas di Indonesia. *Edsence: Jurnal Pendidikan Multimedia*, 2(2), 65-74. <https://doi.org/10.17509/edsence.v2i2.29776>
- Wiley, D. A. (2007). On the sustainability of open educational resource initiatives in higher education. *Organization for Economic Co-operation and Development (OECD)*.