

Development of Teaching Materials Based on Open Educational Resources (OER) to Improve Graduate Competencies in the PLS Program Planning Learning

Friska Indria Nora Harahap¹, Silvia Maria Handayani², Muhammad Takwin Machmud³,
Widiya Lestari Harahap⁴

{friskaharahap@unimed.ac.id¹, zylvie@unimed.ac.id², takwinmachmud@unimed.ac.th³,
widiyalestari14@gmail.com⁴, aisyahanggreni346@gmail.com⁵, arianaari288@gmail.com⁶}

Medan State University, Medan, Indonesia^{1,2,3,5,6}
Institut Teknologi Batam, Batam, Indonesia⁴

Abstract. The aim to be achieved in this research is to develop and determine the feasibility of Open Educational Resources (OER) based teaching materials used in the PLS Program Planning course based on OER principles, namely Retain, Reuse, Revise, Remix and Redistribute. This research is a Research and Development (R&D) study using the Borg and Gall theory which aims to find out the extent of the development of Open Educational Resources (OER) based teaching materials used in the public education department to increase graduate competency in the Public Education Program Planning course. The subjects in this research were all students who took the PLS Education Department Study Program Planning course, namely 50 Community Education students Semester 5 Classes A and B. Research data was obtained through distributing questionnaires to see and determine the development and suitability of teaching materials. The questionnaire used was distributed online via Google form to see the extent of planning materials for OBE-based community education programs. The data analysis technique used is qualitative and quantitative data analysis in the form of percentages. The research results show that (1) OER-based teaching materials are available in PLS Program Planning learning and (2) The teaching materials developed can increase student competence in PLS program planning. Based on the research results, in general it can be concluded that the resulting research product is feasible, in accordance with OER principles and can be used by Community Education lecturers and students who focus on the field of Out-of-School Education. Planning Education or Community Education Programs.

Keywords: Teaching Materials, Open Educational Resources (OER), PLS Program Planning

1 Introduction

Talking about technology in this world is no longer something foreign to everyone. Currently, technology has entered and touches all aspects of human life, including aspects of education today. In this case, education also has an impact due to technological sophistication. In the world of education, the ability to utilize learning with digital technology is a demand for educational institutions (Budiman in Taufik & Udhmah, 2021). One of the educational

institutions, namely universities, must really prepare and plan learning that is relevant to the quality of current technology-based education in order to be able to create a superior generation. One application of technology-based learning is the use of the internet and technology presented through digital information sources. Information available via the internet has given rise to online learning resources.

Currently, there are many internet-based learning resources that can be used and there are also open online learning resources that are used for educational purposes, teaching in education, research and evaluation in education, known as Open Educational Resources (OER) [5]. OER is the provision of various internet-based learning resources that contain various learning information that is presented openly via the internet, meaning that these learning resources can be accessed by anyone, facilitated by technology for free and flexibly. OER is a universal educational resource available to all humanity, especially students, which allows students to reach the necessary learning resources, use, copy and share what is obtained for free on the internet, whether in the form of articles, journals, content modules, learning objects, teaching materials, as well as everything that supports education, including learning.

The term Open Learning Resources was first introduced and disseminated by UNESCO in 2002 through a forum regarding the impact of Open Courseware on higher education in developing countries. The Indonesian government officially supports OER in Article 79 (4) of Law Number 12 of 2012 concerning Higher Education. "The government is developing open learning resources that can be utilized by the entire academic community." Everyone, including students, can access open learning resources through: Repositories and websites of higher education institutions as well as public service sites which are open learning resources. Open learning resources can also be used to access and search for teaching materials that students need, study independently, review learning materials, create new teaching resources, create creative works (sound, text, images, multimedia, etc.).

Medan State University (UNIMED) is one of the higher education institutions that implements a blended learning system (a combination of online and face-to-face learning). Online learning implemented by Medan State University combines asynchronous and synchronous learning, which according to Clark & Mayer (2016:8), "Teachers can lead (synchronous e-learning) or be designed for individual learning (asynchronous e-learning). learning)" "Direct learning that is teacher-centered can be carried out (synchronous e-learning) or designed for independent learning (asynchronous e-learning)" However, this does not only apply to online learning, but also applies to one-on-one learning.

The Community Education Study Program is one of the study programs at Medan State University (UNIMED) which has courses that determine the competency of graduates of the Community Education Study Program in the form of PLS Program Planning course. In presenting and planning a program that will later have implications for the community, PLS graduates must essentially have competencies that can support planning so that the program presented can be appropriate and beneficial to the needs of the community itself, where everything starts from careful and precise planning. Out-of-school education graduates must have adequate competence in planning and implementing PLS programs that can meet community needs in various aspects.

The existence of the PLS Program Planning course is the first step in determining and creating a direction for PLS graduates in presenting programs that will later be presented and created to meet community needs. In the continuity of learning in the PLS program planning course, the teaching media used is an important part of learning which can later help students in determining the program they will create. Teaching media refers to a set or learning tools used consisting of learning media which are designed and formed in a systematic and

interesting way to achieve the learning objectives to be achieved. Learning methods, limitations, and assessment methods to achieve expected goals, such as competencies or subabilities of any complexity. (Widodo and Jasmadi) [8] Teaching media can be defined as all types of media that are systematically arranged and designed according to the relevant curriculum so that students can learn. Knowing freely [8]

Therefore, this research aims to implement and develop Open Educational Resources (OER) based teaching materials to help and improve graduate competency in the PLS Program Planning course. By having Open Educational Resources (OER)-based teaching materials in the PLS Program Planning course that can be accessed by anyone, it is hoped that it can improve and add to graduate competencies and facilitate the implementation of the blended learning system.

2 Research Method

The research used is Research and Development (R&D) research which aims to determine the development of Open Education Resources (OER) based teaching materials to improve and increase graduate competency in the Community Education Program Planning course. Research or RnD is development research which functions to validate and develop products according to research needs (Sugiyono, 2017). The population in this study were all students in the PLS Study Program Planning course, Department of Community Education, namely 50 Penmas Semester 5 Class A and B students. The sampling technique in this study was total sampling, namely the entire sample. The sampling technique in this research is total sampling, namely the entire sample. Determination of the overall sample was based on the needs and obligations of each student in taking the PLS program planning course as a compulsory subject, therefore the involvement of all students was required to obtain the data required for the research.

This research is classified as a type of development research, therefore this research uses steps according to those proposed by Borg and Gall (1989) that there are ten steps for implementing research and development, namely: Research and Data Collection: In this step, researchers will collect data about the teaching materials used and will develop them into complete OER-based teaching materials; Planning: Researchers will prepare a draft of OER-based teaching materials which will later be prepared to be taught by each lecturer in the Program Planning course, both by Unimed lecturers and even lecturers from other campuses; Product Draft Development: Researchers will draft OBE-based teaching materials which will be prepared as a guide/reference for program planning courses; Validation Testing Experts: There are two instrument experts used, namely material experts, media experts and users or students. Material experts to determine the level of product suitability based on content validation. Meanwhile, media experts determine the level of product suitability based on construct validation; Revision of Module Feasibility Test Results by Experts: Based on the results of expert validation tests, revisions will be made based on the input that has been submitted and it is possible that revisions will be carried out in depth to obtain products (OER-based teaching materials) that are ready to be tested widely; Main Feasibility Test: The revised teaching materials will be tested on all 5th semester Penmas students in classes A and B who teach program planning courses and students will also be given assessment instruments to provide input or rebuttal to the materials and methods contained in the teaching materials; Revision of Operational Products: Make improvements/refinements based on input from wider

trial results, so that the product developed is an operational model design that is ready to be validated; as well as Production and Implementation Stages: The production stage of OER-based teaching materials in program planning courses that are deemed feasible and perfect will be produced and reproduced and then distributed widely.

The data collection instrument used in this research is a non-test instrument in the form of a questionnaire. The type of questionnaire used is a closed questionnaire using a Likert scale. There are four possible answers to choose from (very suitable, suitable, not suitable, and very unsuitable). Determining the Likert scale score for the positive direction statement scale will get a score of 4 for Very Appropriate (SS), a score of 3 for Appropriate (S), a score of 2 for Not Appropriate (TS), a score of 1 for those who answered Very Inappropriate (STS), Meanwhile for a scale with a negative direction, the value will most likely be the opposite. Data analysis in this research consists of qualitative and quantitative data analysis. The scoring algorithm used is as follows:

$$\% \text{ of Assessment} = \frac{\sum \text{score obtained}}{\sum \text{score optimum}} \times 100\% \quad (1)$$

The analysis in this research uses qualitative analysis to describe and explain the results based on answers, opinions and suggestions from experts and respondents, namely 50 semester 5 students. Quantitative analysis is useful for describing and describing the level of accuracy and accuracy based on evaluations that will be carried out by material tutors, educators and media users (students), while product validity was checked using a Likert scale (Sugiyono, 2014: 134) after quantitative analysis. Data were averaged and classified based on criteria using the following Likert scale ranking

Table 1. Table of Interpretation Criteria for Development of OER-Based Teaching Materials in PLS Planning Program Courses

Evaluation	Satisfaction Criteria
0% - 20%	Strongly Disagree
21% - 40%	Disagree
41% - 60%	Less Disagree
61% - 80%	Agree
81% - 100%	Strongly Agree

3 Result and Discussion

The results of data analysis were obtained by giving and distributing questionnaires to 5th semester students who were the samples in the research. There are five indicators that are used as evaluation criteria in the development of open learning resources used by students, namely in accordance with OER principles, 50 students who took the PLS program planning course in the Department of Community Education, including students A and B semester 5 of Penmas. The following are the results obtained based on a questionnaire filled out by students. The percentage results show a figure of 83.26% in the agree category. This proves that the

development of teaching materials using OER in the PLS program planning process follows the OER principle which consists of the Retain principle, which makes it possible to download, print and save OER documents, Reuse, which makes it possible to reuse content, Revise, which makes it possible to change content to suit your needs. needs, Remix, which makes it possible to compile various OER sources into a new work, and Redistribute, which makes it possible to share content in the original or modified format. Use of OER in the Curriculum The PLS program plan based on OER principles is shown in the table below.

Table 2. Interpretation of Criteria for Development of OER-based Teaching Materials by taking OER Principles into Account

Indicator	Percentage	Category
Retain Principle	82,53%	Strongly Agree
Reuse Principle	86%	Strongly Agree
Revise Principle	84,2%	Strongly Agree
Remix Principle	81,6%	Strongly Agree
Redistribution Principle	82%	Strongly Agree
Average	83.26%	Strongly Agree

3.1 Retain Principle

In the retain principle indicator, there are 3 statement items with a percentage of 82.53% in the strongly agree category. The first statement which states that teaching materials for community empowerment program planning can be downloaded or downloaded, obtained a percentage result of 83.6% in the strongly agree category. This shows that OER-based out-of-school education program planning teaching materials can be downloaded or downloaded via the Medan State University public education website by clicking on the OPEN EDUCATIONAL RESOURCES (OER) option and selecting the book option, then the out-of-school education program planning teaching materials will appear and can be downloaded or downloaded via the download feature which is in the middle between the print and current view features. As long as there are no technological obstacles, OER can offer democratic and equitable access to knowledge, allowing anybody, regardless of income level, to access and utilize resources. Considering how expensive textbooks may be at times, open educational resources (OER) provide an alternative for those with limited financial resources. Some contend that a truly public education shouldn't ignore the problem of textbook affordability, which would deny some students access to a crucial part of their learning process.

The second statement for the OER principle variable with the retain principle indicator is, teaching materials for planning out-of-school education programs can be printed. Referring to the percentage of existing answers, the results were 80.8% in the agree category. Just as statements can be downloaded or downloaded, teaching materials for planning out-of-school education programs can also be printed, by downloading them first and then printing them, or in an easier way via the print feature which is available right next to the download feature which is visible on the Open Educational display. Resources (OER) on the right side.

The third statement for the OER principle variable with the retain principle indicator is that teaching materials for planning out-of-school education programs can be saved as

documents. The third statement gets the result percentage of 83.2% in the strongly agree category. Basically planning teaching materials Out-of-school education programs can be downloaded or downloaded via the download feature available on the right side of the OER display, so from The teaching materials for planning out-of-school education programs can be saved as a document if they have been downloaded. The saved teaching materials for planning out-of-school education programs will be in the form of documents in PDF format.

3.2 Reuse Principle

In the reuse principle indicator, there are 2 statement items with a percentage of 86% in the strongly agree category. The first statement which stated that teaching materials for community empowerment program planning could be accessed or used more than once obtained a percentage result of 86.8% in the strongly agree category. Teaching materials for planning out-of-school education programs based on Open Educational Resources (OER) which are available on the Medan State University community education website can be accessed or used more than once, meaning that users are free or have no restrictions in accessing the teaching materials either by opening the website repeatedly. or open files in PDF format that have been downloaded repeatedly. OER typically permits reuse, enabling others to modify excellent concepts for their own setting. Other educators can locate, use, and share items that they have created using examples and references from their local area.

The second statement for the OER principle variable with the reuse principle indicator is that teaching materials for planning out-of-school education programs can be used and adjusted according to needs. This statement received an answer with a percentage of 85.2% in the strongly agree category. Teaching materials for planning out-of-school education programs based on Open Educational Resources (OER) can be reused, meaning that users can freely download them any number of times and reuse them without any restrictions. Apart from that, the material or theories contained in the teaching materials can be used, quoted and adapted to suit needs according to their function. This is in accordance with the statement reported by hurixdigital that educators can enhance existing learning materials by using videos, infographics, exercises, assignments, or any other tools they deem suitable to encourage better student engagement. Furthermore, having the freedom to edit and remix information allows teachers to choose which portions of a given lesson plan to include and which to omit. With the help of this personalized material, students can obtain insightful and useful knowledge that piques their interest.

3.3 Revise Principle

In the revise principle indicator, there are 2 statement items with a percentage of 84,2% in the strongly agree category. The first statement which stated that teaching materials for community empowerment program planning could be accessed or used more than once obtained a percentage result of 86.8% in the strongly agree category. The first statement which stated that teaching materials for community education program planning could be changed to be improved received a percentage result of 86% in the strongly agree category. Out-of-school education program planning teaching materials can be changed to be corrected from two points of view, the first is that the out-of-school education program planning teaching

materials which are downloaded in PDF format can be converted into Word format when the user wants to edit them, then secondly the user is allowed to change content in teaching materials for planning out-of-school education programs to be improved. Based on this, OER provides benefits for improving the quality of education due to efforts to change for improvement. Educators can enhance already-existing content based on their knowledge of the subject and the requirements of their students, and then disseminate it further across the education community. As this process develops, educators and education experts working together can create excellent teaching resources.

The second statement which states that teaching materials for planning out-of-school education programs can be changed to be developed or adapted to needs received an answer with a percentage of 86% in the strongly agree category. This means that the teaching materials created are based on the OER principle, namely Revise. OER-based teaching materials make it easier for educators to develop the teaching materials they obtain and then adapt them to their needs.

3.4 Remix Principle

In the remix principle indicator, there are 2 statement items with a percentage of 81,6% in the strongly agree category. The first statement which stated that teaching materials for community empowerment program planning could be accessed or used more than once obtained a percentage result of 86.8% in the strongly agree category. The first statement states that teaching materials for community education program planning can be modified, adapted and used (compiled) with the materials or other OER sources obtained a percentage result of 82.4% in the strongly agree category. This means that students agree that teaching materials can be modified, adapted and compiled with other OER sources. As reported by teachonline, OER is a resource that is freely available to be used, adapted, distributed, translated and shared by anyone without or with very minimal restrictions. It not only aims to save costs but was also developed by individuals who share the belief that world knowledge is a public good and should be accessible to everyone.

The second statement which states that teaching materials for community education program planning can be made into derivatives obtained a percentage result of 80.8% in the agree category. This shows that teaching materials for community education program planning can be made into derivatives.

3.5 Redistribute Principle

In the redistribute principle indicator, there are 2 statement items with a percentage of 82% in the strongly agree category. The first statement states that teaching materials for planning community education programs can be distributed or disseminated in the original format or which has been converted into The new work received a percentage result of 84.8% in the strongly agree category. This provides an impact with fast circulation. Knowledge can spread swiftly (particularly in contrast to knowledge released in journals or textbooks, which can take months or even years to become accessible). The timeliness and/or relevance of the information supplied can be improved by its prompt availability.

The second statement of teaching materials for planning out-of-school education programs can be doubled. It can be concluded that as many as 79.2% agree that teaching materials for planning OER-based community education programs are made based on the Redistribution principle.

4 Conclusion

Based on the five OER principles, namely retain, reuse, revise, remix, and redistribute, the results show that 83.26% of respondents strongly agree that Open Educational Resources (OER) based teaching materials in PLS program planning courses are in accordance with the five OER principles. The first principle, namely retain, which allows downloading, printing and saving OER documents, showed results of 82.53% with the strongly agree category. Second, the principle of reuse shows a result of 86% with the category of strongly agreeing that OER-based PLS program planning teaching materials allow the reuse of content. Third, the principle of revision, namely allowing content to be changed to be improved or developed, showed a result of 84.2% with the strongly agree category. Fourth, the remix principle showed a result of 81.6% with the category of strongly agreeing that PLS program planning teaching materials allow it to be modified, adapted and used (compiled) with other OER materials or sources to become a new work or a derivative of it. Fifth, the redistribution principle showed results of 82% with the category of strongly agreeing that OER-based PLS program planning teaching materials allow them to be shared or disseminated and duplicated in original or modified formats.

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References

- [1] Berti, M. (2018). Open educational resources in higher education. *Issues and Trends in Learning Technologies*, 6(1).
- [2] Cahyadi, R. A. H. (2019). Development of teaching materials based on the ADDIE model. *Halaqa: Islamic Education Journal*, 3(1), 35-42.
- [3] Hadiwidjaja, R. D. (2016). *Utilization of Open Educational Resources (OER) in the Digital Era: Evaluation of the Quality of Dry Lab Accounting (DLA) by Users at Distance Education Institutions*. In: Higher Education Institutions in the Digital Era: Thinking, Modeling and Good Practices. Open University, South Tangerang, pp. 119-135.
- [4] Iswanto, R. (2021). Open Educational Resources (OER) and its Application in the Curup State Islamic Institute Library. *Tik Ilmeu: Journal of Library and Information Science*, 5(1), 79-88.
- [5] Iswanto, R., & Jurianto, J. (2020). Development of the Open Educational Resources

- (OER) management model for the Curup State Islamic Institute Library. *Journal of Information & Library Studies*, 8(2), 171–188. <https://doi.org/10.24198/jkip.v8i2.25696>
- [6] Kodrat, H. A. G., & Rusydiyah, E. F. (2020). Utilization of Open Education Resources in Islamic Religious Education Subjects at the Flagship High School BPPT Al-Fattah Lamongan. *Tarbiya Islamia: Journal of Education and Sciences Islam*, 10(2), 11–22. <http://ejournal.unim.ac.id/index.php/tarbiya/article/view/800>
- [7] Kosasih, E. (2021). *Development of teaching materials*. Literary Earth.
- [8] Magdalena, I., Sundari, T., Nurkamilah, S., Ayu Amalia, D., & Muhammadiyah Mulyatiningsih, Endang (2011) *Applied Research in the Field of Education & Engineering*. Yogyakarta: UNY Press.
- [9] Purwaningsih, T. (2020). Application of Outcome Based Education & Blended Learning in Improving the Quality of Learning Facing the Industrial Era 4.0 in Sampling Techniques Subjects. *Reflections on Innovative Learning*, 2(1).
- [10] Sudjana, Nana. (2016). *Assessment of the Results of the Teaching and Learning Process* in Bandung: PT Pemuda Rosdakarya.
- [11] Tangerang, U. (2020). Analysis of Teaching Materials. *Nusantara: Journal of Education and Social Sciences*, 2(2), 311–326. <https://ejournal.stitpn.ac.id/index.php/nusantara>