

Developing Online Course Portal to Improve Teachers' Competency in Creating Action Research (CAR) Proposal Using Learning Management System (LMS) Moodle

A A Muhtar

Science Teacher, Wira Bhakti Senior High School, Jl. Nani Wartabone, Bonebolango 96184, Indonesia

Email: agus.muhtar@yahoo.com

Abstract. Online course can offer flexible and easy way to improve teachers' competency in conducting education research, especially in classroom action research (CAR). Teachers can attend the course without physically present in the class. This research aims to (1) develop online course portal to improve teachers' competency in creating CAR proposal, and (2) produce proper online course portal validated and evaluated from four aspects: learning process, content, graphic user interface and programming. Online course in this research developed using Learning Management System (LMS) Moodle. The research model is using modified Borg & Gall Research and Development (R&D) started from preliminary studies, designing product, creating product, and evaluation. Product validated by three experts from three universities. Research subjects for field test are seven teachers as participants from different schools in several provinces in Indonesia. Based on expert validation and field test results, the product developed in this research categorized as "very good" in all aspects and it is suitable for teacher to improve their competency in creating CAR proposal. Online course portal produced in this research can be used as a proper model for online learning in creating CAR proposal.

1. Introduction

Referring to the Indonesia's Act of Teacher and Lecturer 2005 Number 14, one of the Teacher's Professional Competency is that the teacher must be able to conduct reflective actions [1]. Classroom action research (CAR) as one of the reflective actions can help teacher answer questions about the effectiveness of specific instructional strategies and identify changes that improve teaching and learning. Even though CAR is very important, it is rarely performed due to the teachers' lack of ability to conduct it. In the other word, teacher competency in CAR needs to be upgraded.

Teacher can improve their competency especially in conducting CAR by several ways, such as by participating in the teacher training or workshop [2]. But not all the teacher can attend training or workshop for several issues such as; this kind of training is rarely arranged, high cost and held in the other region far away from their home. Online course can be a solution for teacher to improve their competency without leaving their duty in the school. This research is conducted to solve these problems by developing free online course portal in Bahasa Indonesia. Teachers can access material in this online course anytime and anywhere using smart phone, tablet or laptop as long as they are connected to the internet.

An "online course" defines by Digital Learning Department, USA (2009) as a course, or grade-level course work, in which more than half of the course content is delivered electronically using the



internet or other computer-based methods, conducted from a remote location through an online course learning management system or other online or electronic tools [3]. Online learning involve text that had merely been converted to electronic form and placed on a website [4]. To make a reliable online course, it must fulfill three qualities condition, (1) content and goal qualities, (2) instructional qualities, and (3) technical qualities [5].

Online course portal in this research developed using LMS Moodle and using free hosting in <https://www.gnomio.com/>. Learning Management System (LMS) is web applications that give educator to create a course web site that can be accessed by using a web browser [6]. LMS also offer a wide variety of tools that can make online course more effective. Moodle (Modular Object-Oriented Dynamic Learning Environment) is a free open-source LMS or e-Learning platform that serves educators and learners across the globe [7]. Moodle appears to present a clear advantage practically in all features. It can suport any teaching style or educational mode [8]. It enables users to create and join communities of practice, engage in reflective learning and collaborate with peers online [9].

It can be inferred from the previous explanation that teachers are still need to upgrade their competency in creating CAR proposal. Online course portal developed using Moodle is one of the alternative solutions to improve teacher competency. The research objectives are (1) develop free online course portal in the topic creating classroom action research proposal, and (2) know teachers' response about this online course portal from its learning process, content, graphic user interface and programming. This online course will give tremendous benefit for education development in Indonesia, especially to help teacher in remote area who want to improve their competency.

2. Model, design, analysis, and implementation

2.1. Model and design

The research model is using modified Borg & Gall Research and Development (R&D) [10]. This model consists of 4 development stage started from (1) preliminary studies, (2) designing product, (3) building product, and (4) evaluation. Output product developed of this research is online course portal to improve teacher competency in creating CAR proposal. All the design of this research is shown in figure 1.

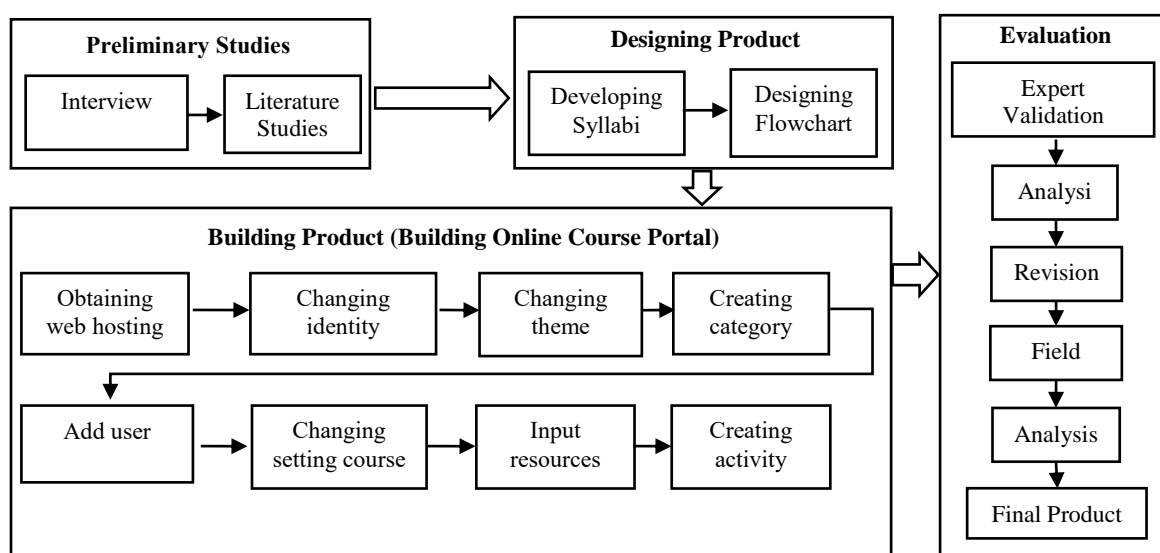


Figure 1. Research design consists of 4 development stage started from: (1) preliminary studies, (2) designing product, (3) building product, and (4) evaluation. (Adapted from Borg & Gall, 1983)

2.2. Analysis and implementation

Three experts validate the product quality in the four aspects; learning process, course content, graphic user interface, and programming using questionnaire that can be accessed in <https://goo.gl/qfFWBN>. Data from the expert validation then analyzed using descriptive qualitative method. Raw data in numbers/score from the questionnaire converted to interval data with scale five (5). Sukardjo (2008) formulated the conversion in the Table 1.

Table 1. Conversion of number/score to be interval data with scale five (5)

Category	Number/Score	
	Equation	Interval
Very Good	$X > x + 1,8 SBi$	$5,00 < X \leq 4,206$
Good	$x + 0,60 SBi < X \leq x + 1,8 SBi$	$3,402 < X \leq 4,206$
Fair	$x - 0,60 SBi < X \leq x + 0,80 SBi$	$2,598 < X \leq 3,402$
Not Good	$x - 1,80 SBi < X \leq x - 0,60 SBi$	$1,794 < X \leq 2,598$
Really Not Good	$X < x - 1,80 SBi$	$X \leq 1,794$

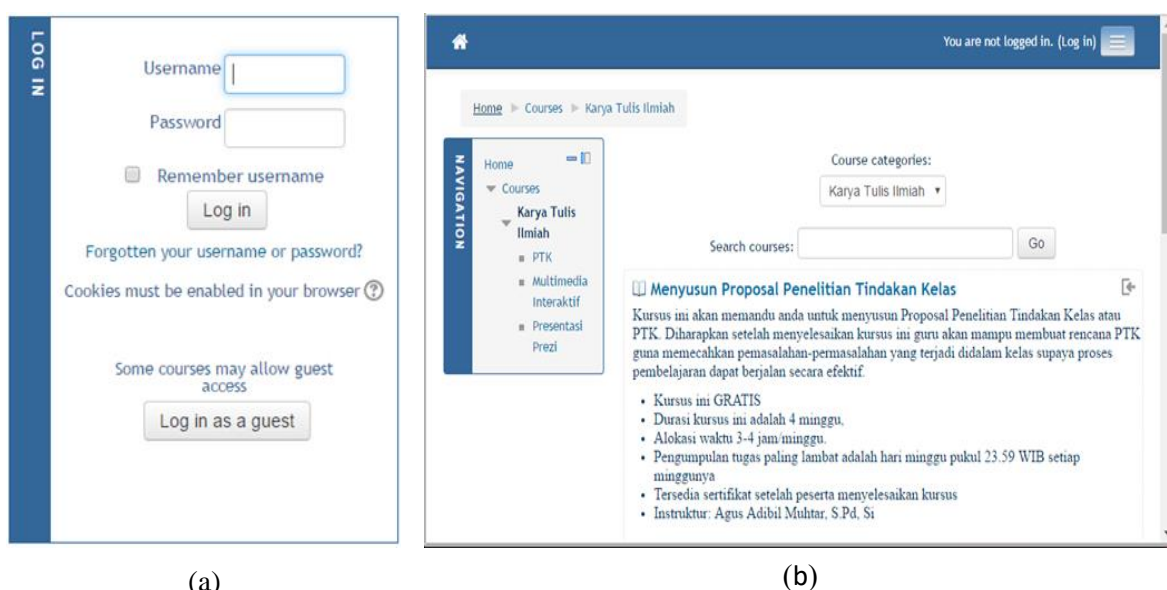
Where x is average ideal score = $\frac{1}{2}$ (maximum ideal score + minimum ideal score), SBi is standard deviation ideal score = $\frac{1}{6}$ (maximum ideal score + minimum ideal score), and X is obtained score.

Experts validation and evaluation then used to improve the quality of product. After revised, the product is ready to be implemented in the field test. Seven (7) teachers as participants from different province in Indonesia were taken randomly as research sample in the field test. Participant questionnaire can be accessed in <https://goo.gl/Ttzkac>. Data obtained from the field test then analyzed again to complete the final product also using descriptive qualitative method. The final product can be implemented if in all four aspects categorized as “Good”.

3. Result and discussion

3.1. Result

Preliminary studies show that teachers have difficulties to conduct CAR and online course can be an alternative solution to overcome this problem. The online course portal developed in this research can be accessed in <https://oase.gnomio.com/>. The online course portal interface is shown in Figure 2 and the architecture of the system is shown in figure 3.



(a)

(b)

Figure 2. The figure (a) and (b) shows online course portal interface.

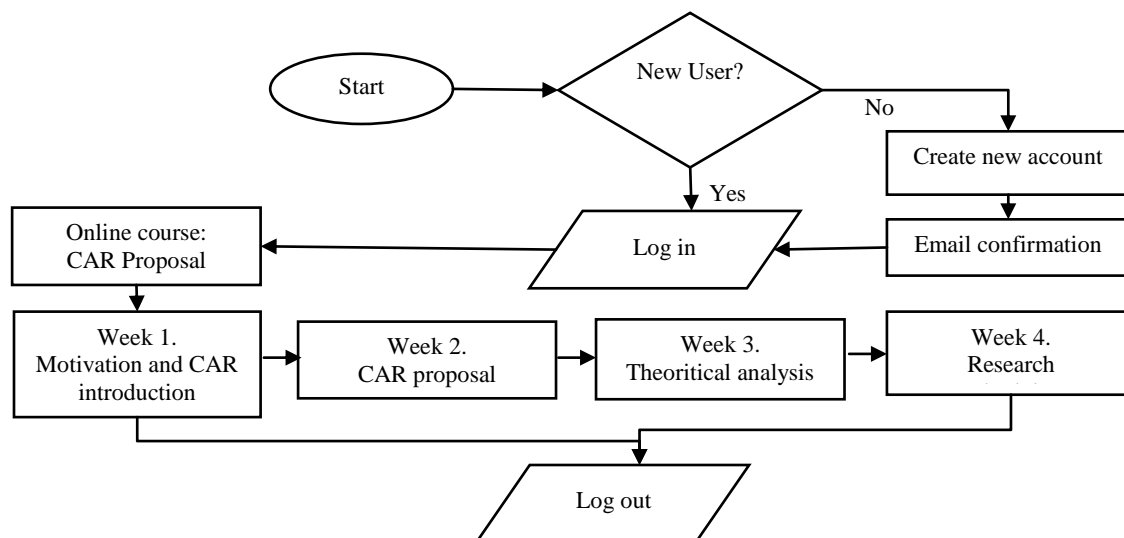


Figure 3. The figure shows architecture of online course portal system.

Online course portal system then validated and evaluated by expert before tested in the field. The validation and evaluation result can be seen in Table 2. After revised and upgraded based on the advice from expert, the product then tested to 7 teachers as participants from different province in Indonesia (Maluku, Gorontalo, East Java, Central Java, West Sumatra and Lampung) to see their teacher responses. Table 3 shows the result from field test.

Table 2. Expert validation result.

Validation Aspect	Average Score	Category
1. Learning process	4,60	Very Good
2. Course content	4,53	Very Good
3. Graphic user interface	4,47	Very Good
4. Programming	4,62	Very Good

Table 3. Teachers' response in using online course portal.

Validation Aspect	Average Score	Category
1. Learning process	4,68	Very Good
2. Course content	4,72	Very Good
3. Graphic user interface	4,56	Very Good
4. Programming	4,64	Very Good

3.2. Discussion

Based on expert validation and field test results, it can be inferred that online course portal developed in this research categorized as "very good" in all aspect and it can be implemented to improve teachers' competency in creating CAR proposal. Course content in this online course consist of several activity designed to be accomplished in four (4) weeks and teacher only have to spent 2-3 hours/week to finish the tasks. This flexible time management will give teacher opportunity to read material, discuss, and collaborate with other teacher. The topics on each week are: Week 1. Introduction and Motivation, Week 2. Title and Background, Week 3. Literature study, and Week 4. Research Methodology and Writing Research Proposal.

There are five activities on the first week; (1) introduction, (2) motivation, (3) reading about CAR introduction, (4) discussion forum about potential problem in the classroom for CAR, and (5) quiz. In the first week, participants are asked to introduce their self, write their motivation and expectation about this online course. They are also have to read material related to CAR introduction. This material contain valuable information about purpose and benefit of CAR, characteristic of CAR, explanation about the difference between CAR another educational research, and how to find potential problem for CAR. As the part of evaluation they are asked to respond each other and give positive feedback in the discussion forum. At the end of session, participants are asked to accomplish the quiz and submit an assignment. The quiz format is multiple choices with 5 questions about what they have learned in week 1.

The courses in the second week are divided into five activities; (1) reading CAR proposal structure, (2) CAR title discussion, (3) writing background for proposal, (4) the objectives, the limitation, and the benefits of the research, and (5) reflection. In the first activity, participants read material and explanation about structure of CAR proposal. After finished first activity, they are asked to make a forum discussion. Each participant has to submit at least one title for their CAR proposal and required to actively involve and collaborate with other participants to get feedback in the discussion about this title. Participants learn how to write proposal background and the objectives, limitation, and the benefits of the research in the third and fourth activity. They are also required to accomplish the quiz and submit their work in these activities. As a closure, participants discuss and share their thought about the problems and obstacles found in week 2 and how they solve these problems.

Participants learn more about CAR proposal in the third week. There are four activities in this week; (1) how to write theoretical base and literature, (2) how to write CAR framework, (3) discussion, and (4) quiz. To give optimum experience in activity one and two, participants are required to read material from external source portal and watch video from YouTube. They are also required to make some discussion about this week topic and submit assignment in the pdf or doc format before the end of third week. Research methodology is delivered in the fourth week. This fourth week is the end of the course and all participants must submit their full CAR proposal. Participants also required submit the final survey about this course.

This product has been validated and evaluated by expert to make sure that the product is valid. Overall, evaluation from the expert categorized as "very good" and the online course ready to be implemented. The expert suggest that the graphic user interface navigation should be consistent and avoid using flashy color. For further development, they suggest to facilitate participants' different learning style and participants are required to finish all the activity in their current week before moving to the next week. Based on this evaluation, the product then updated and upgraded to meet expert expectation.

Seven teachers were selected randomly from different province in Indonesia as the field test participants. They show enthusiasm and gave positive response when participating on the online course. Participant from Gorontalo said *"I am so happy can join in this online course. I can learn and improve my competency without limited by time. I can learn something new without leaving my beloved family because I access this course from my home. This online course allows me to keep balance between my duty as mother and my career as an educator"*. Other participants from Maluku said *"This online course is really interesting and innovative. It can be accessed with easy, anytime and anywhere"*. In line with that, participants from central Java also commented *"This online course can be a solution for everyone who wants to gain their knowledge about CAR"*. On the other hand, participants also gave some advice; (1) add more course content, and trainer should give immediate feedback to the participants, (2) add more information about every activity. Based on these advice, the product then upgraded by added some content and notification for tutor to give immediate feedback. Overall, product evaluation from the participants categorized as "very good" and the online course ready to be used. However, this product has not been tested in the field for larger scale.

4. Conclusion

- Online course portal to improve teacher competency in creating CAR proposal developed using LMS Moodle and using modified Borg & Gall Research and Development (R&D) model, started from preliminary studies, designing product, creating product, and evaluation.
- Online course portal produced in this research is proper and can be used to improve teachers' competency in creating CAR proposal. Overall, product evaluation from expert and participants on the aspects learning process, content, graphic user interface and programming are "very good".

5. References

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