E-Learning Moodle: Design and Development Model of Intensive Reading

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***Abstract*---**The development of the Intensive Reading learning process with e-learning Moodle is a focus of attention in this study. The main purpose is to find out the effectiveness, practicality, and feasibility of e-learning Moodle that has been designed in the process of learning. The instructional model of ADDIE was the basis for this development research which involves Analysis, Design, Development, Implementation, and Evaluation. Twenty-eight students who joined the intensive reading class and eight validators who were experts in their fields became trial participants in this study. The feasibility of e-learning Moodle was validated by an evaluation sheet that was completed by six validators, who were experts in their field such as learning- media, material, and process. Furthermore, the acquisition of data from students' questionnaires becomes the main data in determining of effectiveness and practicality of the e-learning Moodle. The study indicated that learning model produced can be acceptable and eligible categories, including layout, navigation, function, and pedagogical areas. Based on the students' answers related to the use of e-learning Moodle of Intensive reading class, it depicts to be effective and practice in all aspects of the evaluation. In conclusion, the learning Intensive Reading model with the e-learning Moodle is ideal for use in intensive reading course learning processes.

***Keyword*---**design, development, e-learning, intensive reading, moodle.

Introduction

The fundamental role of any learning contributor, whether a lecturer, the learners, and the media, is to stimulate the implementation of learning activities that will eventually result in the achievement of the learning objectives. In several high education, the learning process has not reached the expected competence, because the implementation of the curriculum has not used technology optimally. Besides technological media used in the learning process so far have not fully helped overcome the problems faced. For this reason, it is necessary to find new breakthroughs in overcoming these problems by designing an online-based learning process (e-learning).

In the majority of colleges throughout the world, e-learning has been recognized as a media of learning activity. Martin et al. (2012), claim that the Online teaching and learning process incorporates several e-learning elements, as well as four modes of interaction: student-content, student-instructor, student-student, and student-interface. In keeping with the statement, e-learning is a type of online learning through computer networks in which electronic devices are utilized to allow students to connect with their friends and lecturers. In addition, Thapliyal (2014), Horton & Horton (2003), stressed that e-learning is a media technology that uses an internet connection to support the learning process Meanwhile, Ghirardini (2011), argues that the usage of computer technology and the internet provides users with a variety of learning opportunities. This technology enables students to learn autonomously, at any time, and from any location. Inline Galy et al. (2011), assert that e-learning can improve students' capacity to work independently. Recent studies have been done to demonstrate the value of e-learning in the learning process (Panyajamorn et al., 2018). The advancement of education has benefited learners in getting their information needs; nevertheless, many additional necessities that are lore about various competencies and abilities must be assigned in unison.

To support the development of the learning process with e-learning, intensive reading courses are proposed as the e-course learning model with Moodle of Learning Management System. Moodle has attracted the attention of the world of education in helping the implementation of education with all its benefits (Martín-Blas & Serrano-Fernández, 2009). Several advantages of Moodle, including the availability of various online sources, and exercise, distribution of learning materials with videos, URLs, modules, interaction rooms between lecturers and students such as conference rooms, discussion forums, and chat, etc. (Alier et al., 2010), assert that one of the e-learning media that can be utilized to manage the teaching and learning activity is the Moodle Learning Management System (LMS).

E-learning Moodle has brought innovation to the learning system (Oproiu, 2015). It is also expected to bring renewal in the Intensive Reading learning system (Harandi, 2015; Korucu & Alkan, 2011). Intensive reading so far has been done only in class. So that the impact on the lack of learning time. Meanwhile, Akkoyunlu & Soylu (2008), state that online learning offers round-the-clock learning where learning can be accessed anytime and anywhere. Discussion of the material is often not enough with a predetermined time, and it is only done in the class, so it takes additional time to wait for learning opportunities in class too.

Hameed et al. (2008), claim that the material in online learning can be accessed as often as possible if something is forgotten or limited time in learning. Therefore, it is the reason to need e-learning in overcoming learning problems (Grigorievna et al., 2021). The learning environment has not been a tradition in study programs so far, because learning is only designed for classroom learning (Dorst & Cross, 2001; Dorst, 2011). The difference between this new model and others is the model is designed by combining asynchronous and synchronous learning in one application, which can be used inside and outside class Design development is carried out based on the needs of the development of the learning process by students and lecturers (Mahrlamova & Chabanovych, 2021).

Methods

Instructional development of Analyze, Design, Development, Implementation, and Evaluation (ADDIE) Model used in this study, this model involved ADDIE. It is started from the analysis of students' needs in learning situations, students' capability in learning, and material coverage that would be developed (Czichos & Saito, 2006). Then, the design step is by selecting the media is used, doing design development with e-learning Moodle and storyboard (Mehrabi & sadat Abtahi, 2012). Furthermore, in the step of development, the design learning process was developed and then carried out feasibility testing by validators. In addition, during the implementation step, it conducted an e-learning experiment in learning-intensive reading. In the last, the evaluation step, the student's answers to the test are evaluated, then the result is interpreted (Aldoobie, 2015).

Twenty-eight students have participated in this study. The researchers did not publish the name of respondents but just mention them in code to secure their identities (Cohen et al., 2018). Respondents have the same background of education, economic, and experiences, so it can be concluded that they have the same abilities in learning. In addition, they also have the same capability in using Information Technology. Currently, all respondents are involved in the intensive reading subject (Carrell & Carson, 1997; Mason & Krashen, 1997). Further, the six validators from media, material, as well as learning experts from Universitas Negeri Padang and Universitas Islam Riau, and practitioners from Universitas Negeri Riau, evaluated the e-learning used. The product was evaluated in terms of layout, navigation, function, and pedagogical elements (Saeed, 2013; Siah Sim Tee & Zainudin, 2013; Walker & Hess, 1984). Aiken's V formula was used to carry out the feasibility analysis to the content of the product to produce a product that ready to use (Aiken, 1980) Aiken's V formula (Aiken, 1985). The formula can be seen as follows:

Formula:
V   : Σ s/(n (c -1))
V   : Rater's fix Index
S   : r – lo (Average score - the lowest score in the category)
N   : validator number
Lo   : lowest number of validity score (e.g.1)
C   : highest number validity score (e.g. 5)
R   : validator judgment (Aiken, 1985)

The formula can be described V is validator's or Rater's fix index on the suitability of the item, s is the value provided by the validator subtracted with the lowest value criterion(average score - the lowest score in the category), n is the validator's number, and c is highest number validity (the number of categories that the validator can pick) lo is the lowest score of validity (Kowsalya et al., 2012). Students' answers to the test given were used to assess the effectiveness and practicality of the product. The surveys were distributed and analyzed by the statements in Table 1 (Lee & Martin, 2017).

Results and Discussion

The analysis is the first step in this study. Based on the results of the data analysis that has been carried out, it can be concluded that there is a gap in the current learning process with the demands and desires of changing the learning process by the conditions and character of students (Menaka & Sankar, 2019). This need is reflected in the results of observations as an introduction to the disclosure of problems and the results of the analysis of student questionnaire statements and interviews with lecturers (Sabilah, 2016). The changes in the learning process that students and lecturers want are the presentation of a complete and systematic learning process such as; learning modules as materials that can be studied at home, learning videos as explanations for students, can access URLs as materials, or enriching learning materials. Another need is direct feedback from lecturers on student assignments and knowing the results of tests or evaluations of their learning directly (Rinartha et al., 2018). Virtual meetings through live meetings, discussion forums, and chat are also a necessity for students.

The second step is designing. In the design steps, the researcher constructed the learning syntax as guidance in the design learning process that developed with e-learning Moodle (Ismail, 2001; Assareh & Bidokht, 2011). Learning syntax here the development form Model of teaching from Joyce & Weil (1980), Joyce et al. (2003), it can be seen in Fig 1 below.
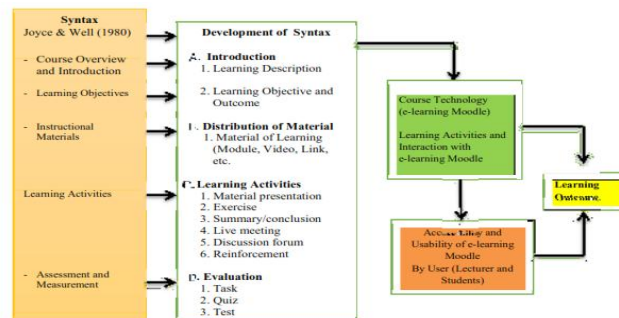

Figure 1. Development of learning process design (Syntax)

The design of an intensive reading learning system refers to the results of needs analysis both from students' responses to questionnaires and the answers of lecturers' interviews. In document analysis, there are several topics related to intensive reading material, including providing an overview of general learning

topics (review or course description). The next step is to determine the learning objectives. Then, deliver learning material through modules, videos, links, and other sources. Learning activities involve material presentation, exercise, summary/conclusion, virtual meeting/live meeting, discussion forum and chat, reinforcement. The last, evaluation and assessment are carried out in the form of tasks, quizzes, and tests. This design becomes the content of the design of e-learning Moodle, it can be accessed by both students and lecturers or e-learning users.

The third step is the Development of the learning process with e-learning Moodle. The development of the learning process uses the e-learning Moodlecloud application. Moodle cloud is one of the developments of Moodle applications provided by the provider to make it easier for users to build learning with Moodle. Users can access it is free or paid. The content of Moodle- Based Learning Process of Intensive Reading (MBLPs-IR) is based on syntax that has been developed. The developed e-learning consists of the initial feature, main page, and course page as shown in the following Fig 2 below.
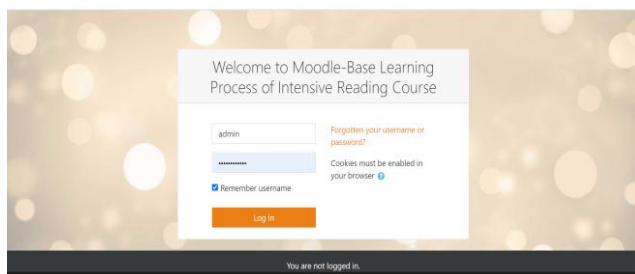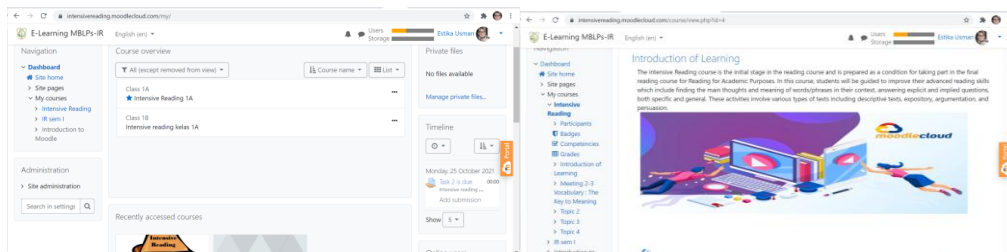

Fig 2. Login page

The students who have been enrolled in the Moodlecloud e-learning can directly log in with the username as their student password. More details can be seen in Fig 3 below.

Figure 3. The Moodlecloud e-learning app workflow (Main page Introduction of Learning - Students' Attendance List - Overview and description of the learning - Learning Material with Module - Learning Material by Video - Learning activities with live meeting - Learning Activities with Forum Discussion and chatting - Task and test)

The students can log in with the given username and password in Figure 2. Further, the lecturer can sign up students who have been enrolled in a subject to this e-learning Moodle. Students who have enrolled in this online class can attend the course online using various facilities provided in e-learning Moodle in the figure. The available facilities consist of topic materials, learning media, live meetings, discussion forums and chatting, assignment space, and test that can be accessed online anywhere anytime.

Furthermore, the media were then validated and revised based on the input from the experts and revision following the trial. The steps in this development stage

were validation and feasibility test. The validation was to test whether the developed media have met the validity criteria based on the assessment of the validators and practitioners. The limited trial was to test the practicality and effectiveness of the developed media. There were six (6) validators to evaluate the validity content and feasibility of the design developed in this study, consisting of validators from Universitas Negeri Padang and validators from Universitas Negeri Riau and Universitas Islam Riau. Each of the validators has been an expert in the field. The following table displays the results of the validation analysis that has been carried out by the relevant validator.

Table 1
Feasibility analysis of the e-learning Moodle from Validators ($V = \sum s/[n(c-1)]$)

Rater	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6		Item 7		Item 8		Item 9		Item 10		Item 11		Item 12		Item 13		Item 14		Item 15	
	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S
1	4	3	4	3	3	2	4	3	4	3	3	2	3	2	4	3	4	3	4	3	4	3	3	2	3	3	3	2	3	2
2	3	2	4	3	3	2	4	3	3	2	3	2	3	2	4	3	4	3	4	3	4	3	3	2	4	3	3	2	3	2
3	4	3	4	3	3	2	4	3	3	2	4	3	3	2	4	3	3	2	4	3	4	3	3	2	3	3	4	3	3	2
4	4	3	4	3	4	3	4	3	3	2	4	3	3	2	4	3	3	2	4	3	4	3	4	3	3	3	3	2	3	2
5	4	3	4	3	4	3	4	3	4	3	4	3	3	2	3	2	4	3	4	3	4	3	4	3	4	3	3	2	4	3
6	3	2	3	2	4	3	3	2	4	3	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2
∑s	16		17		15		17		16		15		12		16		15		17		17		15		17		15		13	
V	0.667		0.708		0.625		0.708		0.667		0.625		0.500		0.667		0.625		0.708		0.708		0.625		0.708		0.635		0.541	

Table 1 depict that coefficient of 0.667 (Item 1), 0.708 (item 2), 0.625 (item 3), 0.708 (item 4), 0,667 (item 5), 0,625 (item 6), 0.667 (item 8), 0. 625 (item 9), 0,708 (item 10), 0.708 (item 11), 0.625 (item 12), 0.708 (item 13), 0.635 (Item 14) in categories valid. Meanwhile there are two items in categories adequate valid 7 (0.500), and 15 (0.541). 13 items are in the valid (good) category. Based on this data, it can be concluded that the items of content validity have been fulfilled.

Table 2
Feasibility analysis of the e-learning media

No	Aspects	Statements	V	Category
1	Layout	a. The content layout in e-learning is appropriate.	0.667	feasibility
		b. E-learning has an intriguing feature.	0.708	feasibility
		c. Background compatibility with content use	0.625	feasibility
2	Navigation	a. Clarity of instruction and category for the user	0.708	feasibility
		b. Content is used simply and consistently in each feature	0.667	feasibility
		c. Text used in e-learning can be properly read	0.625	feasibility
		d. E-learning feature automation	0.667	feasibility
3	Function	a. E-learning interface allows for simple modification	0.625	feasibility
		b. E-learning resources may be easily accessed and used	0.708	feasibility
		c. Information is simple to find	0.708	feasibility
4	Pedagogy Aspect	a. In e-learning, the role and tasks of users (lecturer and student) must be clearly defined	0.625	feasibility
		b. E-learning has a clear learning strategy	0.708	feasibility
		c. Feedback effective media	0.635	feasibility
		d. E-learning can help students study more creatively	0.541	feasibility
		f. E-learning facilities help students improve their HOTS abilities	0.791	feasibility

The validation result was that the developed learning media gained a V Aiken value of more than 0.60 (based on the Aiken table value for six validators of the four (4) assessment scale). This result pointed that all statements were appropriate for each assessment aspect, layout, navigation, function, and pedagogy as shown in table 2. The recommendation from the validators on the

developed e-learning media was on the presentation of learning material and examples or exercises should be added. The instruction of tasks is informed clearly. always activate online forum discussion and chatting, thus, students can directly interact with their lecturer and also their friends. Write the time to accomplish the task in each presented topic material. Develop direct assessment for test questions with short answers. These suggestions from the validator are then taken into consideration by revising the developed e-learning media to be appropriate for students' online learning. Furthermore, e-learning Moodle was implemented on students who enroll in intensive reading courses of Universitas Islam Riau. The learning online learning consisted of four main topics; (1) Vocabulary, (2) Understanding Sentences, (3) Understanding Paragraphs, (4) Reading strategies. Each topic was learned in two activities in two meetings; the first activities students learn by themselves at home or anywhere the materials were provided by lecturer by e-learning Moodle. Second meeting students and lecturers discuss the materials by conference room or forum discussion. After learning with the e-learning Moodle, the students were given the test to know the effectiveness and practicality of the e-learning. The following are the students' answers to the questionnaire provided.

Table 3
Effectiveness and assessments of the developed e-learning moodle

No.	Assessment	Statement	SA	A	N	DA	SDA	Total (N)
1.	Effectiveness	The use of e-learning Moodle can boost students' motivation to learn	21.42%	60.71%	17.86%	-	-	28
2.		The use of e-learning Moodle enables learners to discover more the current Intensive Reading topic	17.57%	57.14%	25%	-	-	28
3.		E-learning Moodle can trigger students' curiosity	28.57%	53.57%	17.86%	-	-	28
4.		E-learning Moodle make students' confident in learning on one's own	57.14%	32.14%	10.71%	-	-	28
5.		E-learning Moodle can aid the development of critical thinking skills.	32.14%	42.86%	17.86%	7.14%	-	28
6.		E-learning Moodle supports the development of assessment abilities.	10.71%	60.71%	17.86%	10.71%	-	28
7.		E-learning Moodle assists the development of skill and creativity.	32.14%	53.57%	14.29%	-	-	28
		Total	**30.51%**	**51.53**				

Table 3 presents learning effectiveness with e-learning Moodle based on students' answers which about 82.13% of students (combined percentage of "agree" (60.71) and "strongly agree" (21.42%) state that the use of e-learning Moodle can boost students' motivation to learn. Then, 74.71% (combined (57.14%) strongly agree and (17.57) agree, the use of e-learning Moodle enables them to discover more the current Intensive Reading topic. Besides that, 82.14% (combined 28.57% strongly agree and 53.57% agree) students admit that learning with E-learning Moodle can trigger their curiosity. Further E-learning Moodle makes students confident in learning on one's own (89.28%) or 57.14% students strongly agree and 32.14% students agree about that. In The next item, 75% of students (combined strongly agree 42.86 and 32.14 agree) e-learning Moodle can aid the development of students' critical thinking skills. Moreover, if combined strongly agree 10.71% and agree 60.71% or about (71.42%) students assert that E-learning Moodle supports the development of students' assessment abilities. In the last, 32.14% students strongly agree and 53.57% students agree or (about 85.71%) students state that e-learning Moodle assists the development of skill and creativity. The

data in table 3 can be concluded that almost all of the students or (about 82%) admit that e-learning Moodle is effective to be used in the learning process.

Table 4
Practicality and assessments of the developed e-learning moodle

No.	Assessment	Statement	SA	A	N	DA	SDA	Total (N)
1.	Practicality	E-learning Moodle is simple to be accessed and It is not complicated to use	28.57%	42.86%	10.71%	14.29%	7.14%	28
2.		E-learning should use a combination of suitable background and foreground screens	32.14%	53.57%	14.29%	-	-	28
3.		E-learning Moodle makes it easy for students to access hyperlinks between files in e-learning	32.14%	46.42	17.85%	3.57%	-	28
4.		Figure, illustrations, graphics, and video in e-learning Moodleattractstudents' attention	53.57%	35.71%	10.71%	-	-	28
5.		The materials in e-learning are given sequential	39.28%	46.43%	14.29%	-	-	28
6.		Texts on e-learning are legible and easy to read	32.14%	50%	17.86%	-	-	28
		Total	36.31%	45.83%				

Table 4 displayed the practicality of e-learning Moodle.The students stated that E-learning Moodle is simple to be accessed. 71.43.13% of students (combined percentage of "agree" (42.86) and "strongly agree" (28.57%). Then, 85.71% (combined (32.14%) strongly agree and (53.57) agree that E-learning should use a combination of suitable background and foreground screens. Besides that, 78.56% students (combined 32.14% strongly agree and 46.42% agree)E-learning Moodle makes it easy for students to access hyperlinks between files in e-learning. Further,figure, illustrations, graphics, and video in e-learning Moodle attract students' attention,89.28% or (combined 53.57% students strongly agree and 35.71% students agree) about thatstatement. In The next item 85.71% of students (combined strongly agree 39.28 and 46.43 agree)the materials in e-learning are given sequential. In the last, 32.14% students strongly agree and 50% students agree or (about 82.14%) that Texts on e-learning are legible and easy to read. Based on the data displayed, it proves that about 82% of students state the e-learning Moodle is very practical in use.

Conclusion

Based on the result of validators' assessments of each examined component, such as layout, navigation, function, and pedagogy, this research concludes that the generated e-learning Moodle falls into the valid and feasibility category to be used. The students' answers to the questionnaire are used to assess the effectiveness and practicality of the generated e-learning Moodle. Following the trial run of this designed e-learning Moodle, students' answers indicate that e-learning Moodle is very effective and practice in all aspects of evaluation. As a result, the researchers can deduce this Moodle-based e-learning media can be used in the Intensive Reading course.

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