

Developing A Lesson Plan of Elchotectim Model Based on Blended Learning for Teaching Mathematics at Primary Schools

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ABSTRACT

The background of this research was the need for a blended learning-based Elchotectim model for PSTE students to develop a lesson plan in mathematics learning. The purpose of this study was to develop a lesson plan using a blended learning-based Elchotectim for PSTE students in mathematics learning. This research is development research using the Plomp method. This research procedure consists of a preliminary research stage, a prototype stage, and an assessment stage. The results of this study show that the final score of expert validation, which is 95.29. This study concluded that the lesson plan using the Elchotectim model based on blended learning for PSTE students in mathematics learning was valid. This research implies that it can become a reference for the application of blended learning-based Elchotectim for students.

Keywords: *Lesson Plans, Elchotectim, Blended Learning, Mathematics, Primary School Teachers Education*

1. INTRODUCTION

Lecturers have a significant role in achieving university learning goals [1-2]. Lecturers must be able to achieve learning objectives by creating a learning process following student characteristics. This learning process requires learning innovation from lecturers.

Learning innovation can be done by adding new elements to conventional learning or creating a new learning process. This learning innovation may align the concept of learning material with the environmental conditions of students [3-4]. This learning innovation is necessary because the University has a big responsibility for the competence of its graduates [5-6]. Global competition requires universities to produce graduates with knowledge and skills [7]. Therefore, there is a need for learning innovations carried out by lecturers, including lecturers in the primary school teacher education department.

The department of primary school teacher education produces students to become primary school teachers [8]. The department of primary school teacher education develops students to have four main competencies, namely pedagogical competence, personality

competence, professional competence, and social competence. Pedagogical competence is related to the learning process, which includes planning, implementing, and evaluating the learning [9]. Personality competence is related to the reflection of a teacher's personality, such as dignity, stability, maturity, and wisdom [10]. Professional competence is related to the understanding of subject curriculum material, scientific structure, and methodology [11]. Meanwhile, social competence is related to a teacher's ability to interact with fellow teachers, education staff, parents, and the community [12]. These four competencies are necessary for the learning process in the department of primary school teacher education, including mathematics subjects.

Students of primary school teacher education are required to take mathematics courses [13-14] because mathematics is one of the compulsory learning in primary schools. Many paradigms state that learning mathematics is boring and scary. This is not caused by the difficulty of the material, but the concepts are not following the characteristics of primary school students. Therefore, students of primary school teacher education are required to take mathematics courses, which consist of basic concepts of mathematics in primary school,

learning mathematics in primary schools, low-grade mathematics education, and high-grade mathematics education.

However, the implementation of mathematics learning in elementary schools did not run optimally. From the final grades of elementary school teacher education students, only 40% of students get very satisfying grades. Besides, based on observation and documentation, there are no learning innovations that match the characteristics of students. Therefore, in previous studies, researchers developed a Blended Learning-based Elchotectim model for mathematics learning. This development follows the demands of a technology-based learning process. Also, Elchotectim learning is following the characteristics of students who tend to develop a project-based learning process.

The development of this model is accomplished in the form of a lesson plan. The lesson plan is significant in the learning process because it plays role as a guide for lecturers in achieving learning objectives. Therefore, this study aims to develop blended learning- based Elchotectim model for students of primary school teacher education.

2. RESEARCH METHODOLOGY

This research is development research using the Plomp method. This research procedure consists of a preliminary research stage, a prototype stage, and an assessment stage. The preliminary research stage contains needs analysis and literature review. Meanwhile, the prototype stage relates to designing a prototype, validation testing, and revision. The assessment stage consists of trials on the main scale. However, this research only conducted until the prototype stage due to limitations in the implementation of activities. The research instruments were the observation sheet and the validation sheet. In the preliminary phase, the data analysis explained descriptively the preliminary analysis related to needs analysis, content analysis, and literature review. The descriptive analysis provided conclusions for each analysis. The analysis results were used as an input for developing a lesson plan. Experts' judgement was necessary to test the validity of this lesson plan. The experts give their opinion about the lesson plan.

In the validity, a Likert scale was used. The validity score is given by finding the average value with the following categories (Table 1).

Table 1. The Validity Categories

No	Value Scale	Description
1	$80,00 < x \leq 100,00$	Very high validity
2	$60,00 < x \leq 80,00$	High validity
3	$40,00 < x \leq 60,00$	Medium validity
4	$20,00 < x \leq 40,00$	Low validity
5	$10,00 < x \leq 20,00$	Very low validity

6	$x \leq 10,00$	Invalid
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3. RESULT AND DISCUSSIONS

3.1. Preliminary Research Stage

Needs analysis aims to critically determine the problem, to find information and appropriate problem-solving solutions. A needs analysis was carried out by collecting information through observation and interviews with mathematics lecturers in the primary school teacher education department. There is no lesson plan with a blended learning-based Elchotectim model for students of primary school teacher education. Therefore, it is necessary to develop this lesson plan.

This development is also supported by the modern learning concept, which demands a technology-based learning process to develop knowledge and skills. This skill development can work through maximizing the project-based learning system so that the technology-based learning model can operate together with the project-based learning process.

3.2. Prototype Stage

The prototype stage consists of designing a prototype, testing validation, and revising it. The lesson plan design consists of the structure of the subject's identity, the formulation of indicators and learning objectives, the materials of learning, the selection of learning approaches and models, the activities of learning, the selection of learning resources, and the assessment of learning. After that, there is a process of development and validation by experts. The validation was carried out by three experts. The results can be seen in the following table:

Table 2. The Result of Validation

No	Assessment Points	Assessment 1		Assessment 2	
		Validator 1	Validator 2	Validator 1	Validator 2
A. SUBJECT'S IDENTITY					
Assessment Indicators: Accuracy and Completeness of Identity					
1	Include the name of the university	5	5	5	5
2	Include the subjects	5	5	5	5
3	Include the class	5	5	5	5
4	Include the semester	5	5	5	5
5	Include the general instructional objectives	5	5	5	5
6	Include the specific instructional objectives	5	5	5	5
7	Include the indicators / objectives	5	5	5	5
8	Include the allocation of time/number of meetings	5	5	5	5
Assessment Indicator: Accuracy of Time Allocation					
9	The effectiveness of the time allocated to achieve the goal	3	3	4	5
10	The efficiency of the allocated time	3	3	4	5
B. THE FORMULATION OF INDICATORS AND LEARNING OBJECTIVES					
Assessment Indicators: Accuracy of Formulation of Indicators and Objectives with Competency Standards and Basic Competencies					
11	The description of competency achievement indicators refers to specific instructional objectives	3	3	4	5
12	The description of learning objectives refers to competency achievement indicators	3	3	4	4
13	Using observable operational verbs	3	2	4	4
14	Linkage and integration of basic competencies, achievement indicators, and learning objectives	3	4	4	5
C. THE MATERIALS OF LEARNING					
Assessment Indicators: suitable for Learning Objectives					
15	The suitability of the learning material presented with the learning objectives	3	3	4	4
16	Pay attention to differences in student ability levels	2	2	4	5
17	Oriented to student learning needs	2	2	4	4
D. THE SELECTION OF LEARNING APPROACHES AND MODELS					
Assessment Indicators: Suitable for Learning Objectives					
18	The suitability of the learning approach with the learning objectives	3	3	4	4
Assessment Indicators: Suitable for Learning Material					
19	The suitability of the learning approach with the learning material	3	2	4	4
Assessment Indicators: Suitable for Student Characteristics					
20	The suitability of the learning approach with student characteristics	3	3	4	4
21	Empowerment of students in learning activities	3	2	4	5
E. ACTIVITIES OF LEARNING					
Assessment Indicators: suitable for Process Standards					
22	The accuracy of apperception and motivation in preliminary activities	2	2	5	4
23	The accuracy of the Project on core activities	2	2	5	5
24	The accuracy of drawing conclusions, reflections, assessments, and feedback on closing activities	2	2	4	5
Assessment Indicators: suitable for learning with a blended learning approach					
25	The suitability of the learning steps in the blended learning approach	3	3	4	4
26	Provide opportunities for students to think critically and systematically	2	3	4	4
F. THE SELECTION OF LEARNING RESOURCES					
Assessment Indicators: Suitability of Learning Resources with Learning Objectives					
27	The suitability of learning resources to the achievement of learning objectives	3	3	5	5
Assessment Indicators: Suitability of Learning Resources with					

Learning Materials					
28	The suitability of learning resources with learning materials	2	3	5	5
Assessment Indicators: Suitability of Learning Resources with Student Characteristics					
29	The suitability of Learning Resources with student characteristics	2	3	4	5
G. THE ASSESSMENT OF LEARNING					
30	The suitability of the selection of assessment techniques with learning objectives	3	2	4	4
31	The suitability of the selection of assessment items with learning objectives	3	3	4	4
32	Description of assessment instruments with learning objectives	2	3	4	5
Assessment Indicators: Occurrence and Accuracy of Assessment Procedures					
33	Existence and accuracy of assessment procedures	3	3	5	5
34	The occurrence of instruments, answer keys and scoring rubrics	2	3	5	5
Total		111	113	158	166
Score		65,29	66,47	92,94	97,64
Average Score		65,29		95,29	
Category		High Validity		Very High Validity	

From the table above, validation 1 gets a score of 65.29 with the high validity category. Second revision and validation were necessary to improve the implementation of the lesson plan. Thus, the final score reached 95.29, with a very high validity category. In conclusion, the lesson plan with blended learning-based Elchotectim model is valid and feasible to use.

The lesson plan is crucial in the learning process [15]. A lesson plan can be a guide for lecturers in achieving learning goals. The lesson plan with the Elchotectim model based on blended learning is valid to be used. The lesson plan is developed with a clear identity. This is following the statement that the lesson plan must have a clear subject identity [16]. The lesson plan is also developed with indicators and learning objectives. This is in line with the statement that the learning plan must have indicators and measurable learning objectives [17]. The lesson plan is also developed with clear and precise learning materials. This is following the statement that developing a lesson plan must have a clear learning material [18-19]. This lesson plan is also developed through an appropriate blended learning approach. This is in line with a statement that the lesson plan must have a clear learning approach [20-21].

Furthermore, the lesson plan is developed with a clear Elchotectim model of learning activities. This is following the statement that the lesson plan developed must have clear learning activity [22-23]. The lesson plan is also developed by selecting clear learning resources. This is following the statement that a lesson plan must have clear learning resources [24-25]. Therefore, the lesson plan with blended learning-based Elchotectim model for students of primary school teacher education is declared valid.

4. CONCLUSION

The results of this study show that the final score of expert validation is 95.29. This study concludes that the lesson plan for a blended learning-based Elchotectim model for students of primary school teacher education in mathematics learning is declared valid. Based on results of research and discussion, the researcher is concludes several things, they are.

AUTHORS' CONTRIBUTIONS

The first author contributed to this study as data collectors and the second and third authors contributed as guides in the research process.

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REFERENCES

- [1] M.J. Al Shobaki and S.S. Abu-Naser, The Role of the Practice of Excellence Strategies in Education to Achieve Sustainable Competitive Advantage to Institutions of Higher Education-Faculty of Engineering and Information Technology, in: Al-Azhar University, Gaza a Model, 2017
- [2] J. Andrews, D.R. Garriso and K. Magnusson, "The teaching and learning transaction in higher education: A study of excellent professors and their students, in: Teaching in higher education, vol.1, no. 1, pp. 81-103, 1996.
- [3] A.A. Hussin, Education 4.0 made simple: Ideas for teaching, in: International Journal of Education and Literacy Studies, vol.6, no. 3, pp.92-98, 2018
- [4] W. Westera, "On strategies of educational innovation: Between substitution and transformation. Higher education," vol.47, no. 4, pp. 501-517, 2004
- [5] M.A Albanese and S. Mitchell, Problem-based learning: A review of literature on its outcomes and implementation issues, in: Academic Medicine-Philadelphia, vol.68, pp.52-52, 1993
- [6] V.Puncreobutr, Education 4.0: New challenge of learning, in: Theresa Journal of Humanities and Social Sciences, vol.2, no. 2, 2016
- [7] R. Eliyasni, A.K Kenedi AND I.M Sayer, Blended Learning and Project Based Learning: The Method to Improve Students' Higher Order Thinking Skill (HOTS), in: Jurnal Iqra': Kajian Ilmu Pendidikan, vol.4, no. 2, pp. 231-248, 2019.
- [8] S. Ahmad, A.K Kenedi, Y. Ariani and I.K Sari, Instrument higher order thinking skill design in course high-class mathematics in elementary school teacher of education departement, in: Journal of Physics: Conference Series, vol. 1321, no. 2, p. 022129, 2019
- [9] A. Bentri, Mastery of primary school teacher pedagogy competency in curriculum 2013 implementation in Indonesia, in: The International Journal of Counseling and Education, vol.2, no. 2, pp. 78-84, 2017
- [10] T. Gnams and B. Batinic, A personality - competence model of opinion leadership, in: Psychology & Marketing, vol.29, no. 8, pp. 606-621, 2012

- [11] M. Mulder, Conceptions of professional competence, in: Springer, Dordrecht, 2014
- [12] K.L Lane, M. R Pierson and C.C Givner, Secondary teachers' views on social competence: Skills essential for success, in: *The Journal of Special Education*, vol.38, no. 3, pp. 174-186, 2004
- [13] Y. Helsa and A.K Kenedi, Edmodo-Based Blended Learning Media in Learning Mathematics, in: *Journal Of Teaching And Learning In Elementary Education (JTLEE)*, vol.2, no. 2, pp.107-117, 2019
- [14] S. Ahmad, A.K Kenedi, Y. Helsa, Learning Model and Higher-Order Thinking Skill in Advanced Mathematical Studi, in: *5th International Conference on Education and Technology (ICET 2019)*, Atlantis Press, 2019
- [15] A. Jamali Nasari and M. Heidari, The important role of lesson plan on educational achievement of Iranian EFL teachers' attitudes, in: *International Journal of Foreign Language Teaching and Research*, vol.2, no. 5, pp.27-34, 2014
- [16] T.H Utami, Indikator dan Tujuan Pembelajaran dalam Rencana Pelaksanaan Pembelajaran, in: *Prosiding Seminar Nasional MIPA*, vol. 1 , no. 1, 2010
- [17] W. Wikanengsih et al, Analisis Rencana Pelaksanaan Pembelajaran (RPP) Mata Pelajaran Bahasa Indonesia (Studi terhadap RPP yang Disusun Guru Bahasa Indonesia Tingkat SMP di Kota Cimahi), in: *Jurnal Ilmiah P2M STKIP Siliwangi*, vol.2, no. 1, pp.106-119, 2015
- [18] R. Juliani, S. Utari and D. Saepuzaman, Rekonstruksi rancangan rencana pelaksanaan pembelajaran (rpp) melalui analisis kesulitan literasi sains peserta didik sekolah menengah pertama pada topik listrik dinamis, in: *Jurnal Penelitian Pendidikan Matematika dan Sains*, vol.1, no. 1, pp. 1-10, 2017
- [19] A. Setyawanto, H. Sunaryo and I.A Basuki, Rencana pelaksanaan pembelajaran (RPP) guru bahasa Indonesia tingkat SMP di Kota Malang, in: *Jurnal-online. um. ac. id*, pp.1-11, 2012
- [20] W. Sanjaya, Perencanaan dan desain sistem pembelajaran, in: *Kencana*, Jakarta, 2015
- [21] A. Prastowo, Menyusun Rencana Pelaksanaan Pembelajaran (RPP) Tematik Terpadu: Implementasi Kurikulum 2018 Untuk SD/MI, in: *Kencana*, Jakarta, 2017
- [22] I.N. Sudiarta, Upaya Penggunaan Rencana Pembelajaran Semester dalam Menunjang Proses Belajar Mengajar Di FKIP Universitas Dwijendra Denpasar, in: *Widya Accarya*, vol.5, no. 1, pp. 1-10, 2016
- [23] L. Sumardi, Telaah Rencana Program Pembelajaran Pendidikan Pancasila Dan Kewarganegaraan Sekolah Dasar Di Kota Mataram, in: *El-Hikam*, vol. 7, no. 2, pp. 309-324, 2014
- [24] R. Abdullah, Pembelajaran berbasis pemanfaatan sumber belajar, in: *Jurnal Ilmiah Didaktika: Media Ilmiah Pendidikan dan Pengajaran*, vol.12, no. 2, pp. 1-10, 2014
- [25] Suraji and A. Nurkhamidi, Kemampuan Guru MI yang Bersertifikat Pendidik dalam Menyusun Rencana Pembelajaran (Kasus Kota Pekalongan), in: *Jurnal Penelitian*, vol.10, no.1, pp.1-10, 2014