Designing Problem-based Learning Syllabus for English Language Teaching Research Course

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Abstract. As one of the documents communicating the content of a language course, a syllabus should be prepared according to the learner's needs. In response to this need, the study aims to design a problem-based learning syllabus for the English Language Teaching Research (ELTR) Course. To achieve the objectives, the four-D model by Thiagarajan, et al involving defining and designing stages was employed. To collect the data, an academic writing test and interview were used as the research instruments engaging 43 students and 5 assistant professors. Moreover, curriculum analysis was also conducted to formulate the framework of the syllabus. Based on the obtained data, the syllabus was designed for 16 meetings. The formulated indicators derived from curriculum analysis reflect the desired graduate profile to have knowledge and skills to conduct research in their own professional field, particularly in ELT. The prototype of the ELTR syllabus will contribute further to the developing and disseminating stage for the implementation purpose.

Keywords: Problem-based Learning, Syllabus, ELTR Course.

1   Introduction

For EFL teacher candidates, English Language Teaching Research (ELTR) is one of the courses that play a significant role in language teaching and teacher education [1]. The relationship between language teaching and research enables teachers, teacher educators, and teacher candidates to decide how to conduct teaching and learning activities that best serve students. Research would inform the teachers of the appropriate standard for instructional material and assessment that suit the particular language classroom.

ELT research is the practice of conducting research using information in the language classroom. Research implicates the process of exploring new knowledge that leads to the understanding of the previously unknown. Simply put, research concerns seeking a solution to problems or answering questions [2]. In the ELT research course, the students are trained on how to specify the goal setting, determine the methods of data collection, and evaluate and analyze the data. To acquire these re-

search skills, it is necessary for the students to have the ability of critical thinking and problems solving skills.

Critical thinking skills deal with the ability to analyze information by testing the hypothesis against relevant criteria [3]. It means in the research process, critical thinking skill emphasizes a rational, objective, and self-aware approach to avoid personal biases and assumptions when encountering information and evaluating data. Meanwhile, problem-solving skill deal with the ability to find the root of a problem/case and resolve the problem effectively [4]. Conducting research means embarking on a journey into the great unknown. Problem-solving skills will lead the researchers to understand the context of the problem, frame it, and provide the best solution to problems. As one of the key competencies in research, the ability to problems solving would affect the researchers to implement the solutions.

Critical thinking and problems solving skills have also been the main focus of the Indonesian Minister's Education and Culture by issuing the policy of 'Merdeka Belajar Kampus Merdeka (MBKM)' or freedom to learn-independent campus in higher education institutions (HEIs), the teaching and learning process should apply the method of problem-based learning or case method, and/or team-based project [5]. It aims to enhance students' hard and soft skills, hoping that the students who graduate from university would possess the knowledge and skills that support their work-life career in the future. In response to this policy, the study program in HEIs can provide courses focusing on critical thinking and problem-solving skills, and/or integrate critical thinking and problem-solving skills in the core subjects [6]. This, for example, can be executed by providing teaching and learning documents integrated with team-based projects or problem-based learning (PBL).

A few researchers already focused on investigating PBL in learning. It is found that the PBL teaching model can improve students' critical thinking skills of analysis and interpretation [7], and enrich students' arguments in writing essays [8]. Moreover, the piloting of PBL on materials development model in language teacher programs positively impacts professional skills development such as teamwork and leadership [9]. However, no researcher is concerned about designing syllabi on language classroom research for English language education.

Based on the preliminary study, it is known that the English language study program of Universitas Maritim Raja Ali Haji does not yet provide a syllabus integrated with PBL. This case occurs as there is no urgency to prepare such instructional design in the ELT classroom. In response to the policy of the Indonesian Minister of Education and Culture on utilizing PBL in the teaching and learning process and knowing the advantage of PBL in research classrooms, the research question is "How to design a problem-based learning syllabus for ELTR Course?".

1.1   Designing Problem-based Learning Syllabus in ELTR Course

A syllabus is one of the teaching and learning documents that concerns teaching content. A syllabus represents behavioral or learning objectives for students, a specification of how content/learning material will be taught, and how it will be evaluated [10]. In general, the syllabus informs the students what they need to know about how a

course will be run and what is expected from students taking the course. For a syllabus takes a vital role in translating curriculum into a teaching and learning process at the classroom level, it is significant to design a syllabus that matches the students' need.

The ELTR course is a subject that undergraduate students should complete to get a bachelor's degree. When writing research papers, students develop their critical and analytical thinking skills to find and evaluate information to seek answers. To facilitate the students acquiring these skills, it is important for HEIs, particularly the study program, to provide the syllabus integrated with PBL.

PBL embeds students' learning process in real-life problems and effectively facilitates students' problem-solving and self-directed learning skills. The syntax of PBL is presented in Table 1 below [11].

Table 1. The Syntax of Problem-based Learning

Syntax	Teacher's activity	Students' activity
Students' orientation on the problems or complex scenario	Explaining the learning objectives; motivating the students to be involved in the problem-solving process	Observing the problem; asking questions; listening to the teacher's explanation
Organizing the students to learn	Assisting the students to organize the learning assignment	Working together in groups by having a discussion
Identifying and formulating the problem	Stimulating the students to gather suitable information by having a group discussion	Analyzing information; formulating the problem; and identifying additional information
Investigating and problem solving	Stimulating the students to gather suitable information by having group discussions; giving assignments to look for data sources (references)	Gathering information from various sources; making assumptions; evaluating the results obtained
Presenting the results	Assisting the students to plan and prepare the discussion results	Communicating the results; comparing group answer
Drawing conclusion	Reflecting on and evaluating the problem-solving process	Evaluating the results of all groups; interpreting the solutions; and making the conclusion

2   Method

The study employs research and development (R&D) to design the PBL syllabus for the ELTR course. R&D is a cyclical process of designing, developing, and evaluating instructional programs, processes, and products, that fulfill the requirements of validity, practicality, and effectiveness [12]. In the R&D method, various models could be customized to the study's needs. This study adopts a four-D model developed by Thiagarajan et al. [13]. The models consist of four phases: defining, designing, develop-

ing, and disseminating. The objective of the study is to design a PBL syllabus for the ELTR course, therefore the present study only employed two stages of R&D by Thiagarajan, which are defining and designing phases. The study involved interviews, academic writing tests, and documentation to collect the data. There were 5 assistant professors were interviewed to determine the availability of the syllabus and the condition of the teaching and learning process in an ELTR classroom. Subsequently, an academic writing test was assigned to 43 students taking ELTR class to know students' preliminary competency in writing. Writing skill is important in research because it is the primary channel for communicating scientific knowledge. The writing test is adopted from International Language Testing System (IELTS) and analyzed using IELTS writing bands. Meanwhile, documentation was also conducted using a curriculum analysis to derive the syllabus into practice.

3   Results and Discussion

The results of this research are presented in two stages involving defining and designing stages adopted from the four-D model by Thiagarajan.

3.1 Results

3.1.1 Defining
Front-end Analysis. Front-end analysis answers the preliminary question of this research whether a problem-based learning syllabus for English Language Teaching Research Course is required in the English Language Education Study Program of Maritime Raja Ali Haji University. For that matter, 5 assistant professors of the study program were interviewed.

Table 2. Interview Results on the Syllabus need

Questions	Answer	
	Yes	No
Do you design your own syllabus for ELTR Course?		100%
Do you think the current syllabus already accommodates the learning activity in the ELTR course?		100%
Do you apply the problem-based learning model in the ELTR course?		100%
Do you think problem-based learning suits learning an ELTR course?	100%	

Based on the interview results, it is known that all assistant professors do not design their own syllabus for ELTR Course. It is because the assistant professors continue using the syllabus provided by the study program. Moreover, the learning model applied in the course is not reviewed to see its effectiveness in supporting the learning activity in an ELTR course. Thus, the design of a problem-based learning syllabus for the ELTR course is seen as an alternative solution to solve the problem.

Learner Analysis. In the preliminary stage of syllabus design, the characteristic of the target students needs to be analyzed. In ELTR class, students are expected to produce a research proposal, mini-research, or article as the course output. This means students' cognitive competency in subject-matter areas, particularly writing, needs to be identified. Forty-three students were enrolled to take the writing test adopted from IELTS. Table 2 shows that the average level of student competency is in the range of 4.35 out of 9. In other words, the student's problem-solving skills in writing are low related to task response, coherence and cohesion, lexical resource, and grammatical range and accuracy. It also means the students respond to the task only in a minimal way, or the answer is tangential and may present repetitive or irrelevant main ideas and not well supported.

For the students' cognitive competency already revealed, the syllabus must be designed to meet students' criteria. Learning material, learning indicator, and evaluation is then designed to boost students' skills, particularly problem-solving skills.

Table 3. Average Score of Students' Writing Test

Total Students	Average Score				
43	Task Response	Coherence and cohesion	Lexical Resources	Grammatical Range and Accuracy	Avg Band
	4.37	4. 28	4.23	4.3	4.35

Task Analysis. Task analysis deals with breaking down the instructional task into various component subtasks. In this matter, task analysis means designing *Capaian Pembelajaran Mata Kuliah* (CPMK) or the Course Learning Outcome of the Syllabus. CPMK is derived from *Capaian Pembelajaran Lulusan* (CPL) or Graduate learning outcome. CPL is formulated by the study program covering aspects of attitude, knowledge, general skills, and specific skills according to the provisions of KKNI (Indonesian National Qualifications Framework) and SN-Dikti (National Education Standards).

To formulate CPMK, CPL charged to the ELTR Course needs to be identified as the initial step. The CPL identification is displayed in Table 4 below.

Table 4. CPL Identification Charged to ELTR Course

Graduate Learning Outcome	Code (SN Dikti 2020)	Graduate Learning Outcomes of the Study Program Charged to the ELTR Course
	S	Attitude
	S6	Able to work together and have social sensitivity and concern for society and the environment
	S8	Able to internalize values, norms, and academic ethics
	S9	Able to demonstrate a responsible attitude towards work in the field of expertise independently
	P	Knowledge

P2	Able to master linguistic theoretical concepts, language learning, and oral and written communication techniques in everyday/general, academic, and work contexts equivalent to post-intermediate level
P10	Able to understand humanities, communication and design
KU	**General Skills**
KU1	Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their field of expertise
KU2	Able to demonstrate independent, quality, and measurable performance
KU5	Able to make appropriate decisions in the context of solving problems in their area of expertise, based on the results of information and data analysis
KK	**Specific Skills**
KK2	Able to study current issues in the field of English which includes teaching, language, and literature by using information technology responsibly and presenting it in an easy-to-understand scientific writing
KK5	Able to use science and technology properly and correctly in the teaching process to develop teaching materials and learning media in primary and secondary education units
KK6	Able to carry out and publish the results of research in the field of English education, which can be used in providing various alternative solutions to problems in primary and secondary education units

After identifying CPL, CPMK specific to the ELTR course, is formulated. By considering the characteristics of the ELTR course, CPL, and students' prior cognitive' competency, CPMK is formulated in five learning outcomes.

Table 5. CPMK Formulation Derived from CPL of the Study Program

CPMK 1	Understanding the areas and scope of English Language Teaching Research
CPMK 2	Selecting and defining a research topic
CPMK 3	Reviewing the literature of research topics in English Language Teaching Research
CPMK 4	Categorizing and analyzing research methodology, both qualitative and quantitative research
CPMK 5	Writing a research proposal in English Language Teaching Research

Concept Analysis. In this phase, a set of criteria for determining what to achieve in ELTR course is defined. After CPMK is formulated, it is used as the basic framework to formulate sub-CPMK as the expected final learning outcomes for each meeting. The formulation of this sub-CPMK (Sub-Course Learning Outcome of the Syllabus) is presented in Table 6 below.

Table 6. Sub-CPMK formulation derived from CPMK

Sub-CPMK 1	The students are able to understand the areas and scope of English Language Teaching Research.
Sub-CPMK 2	The students are able to select and define a research topic.
Sub-CPMK 3	The students are able to review the literature on a research topic.
Sub-CPMK 4	The students are able to identify the design of quantitative research.
Sub-CPMK 5	The students are able to identify the design of qualitative research.
Sub-CPMK 6	The students are able to identify the design of mixed-method research.
Sub-CPMK 7	The students are able to identify the components and structure of a research proposal.
Sub-CPMK 8	The students are able to write a research proposal.

Specifying Instructional Objectives. In this phase, task and concept analysis are transformed into instructional material goals. It means CPMK and sub-CPMK are converted into indicators of the syllabus. Indicators are determined from Sub-CPMK as the expected final learning outcome that must be achieved at each meeting to meet the CPL. There are 13 effective meetings for the ELTR course for one semester, which are displayed in Table 7 below.

Table 7. Indicators Formulation derived from CPMK and sub-CPMK

Meeting	Indicators
2	Identifying a research topic
	Formulating a good research topic
	Analyzing the literature review for the research topic
3,4	Identifying characteristics and purpose of classroom action research
	Understanding the design of classroom action research
5,6	Identifying characteristics and purpose of experimental research
	Identifying experimental validity
	Identifying the design of Group experimental research
	Identifying the design of Single- subject experimental research
7,8	Identifying characteristics and purpose of case study research
	Understanding the design of case study research
10,11	Identifying characteristics and purpose of content analysis research
	Understanding the design of content analysis research
12, 13'	Identifying characteristics and purpose of RND
	Identifying the process of RND
14,15	Writing a research proposal

3.1.2 Designing

The second stage is syllabus design. The purpose of this stage is to design a proto-type of the syllabus to be developed. The selection of materials, media, and formats for prototyping are major aspects of the design stage.

Constructing Criterion-Referenced Test. Constructing a criterion-referenced test is a step that links the defining to the designing stage. The test formulation is based on the analysis of learning indicators and learner analysis. The outcome of the ELTR course is to enable the students to write a research proposal. This writing test is ad-justed to the student's cognitive abilities and is scored using an evaluation guide for proposal writing.

Table 8. Research Proposal Writing Evaluation

Evaluation Aspect	Rubric	Score
the paper is in accordance with the guidelines of proposal writing and typing style	excellent (76-100)	
	good (66-75)	
	fair (56-65)	
	poor (0-55)	
Originality	excellent (76-100)	
	good (66-75)	
	fair (56-65)	
	poor (0-55)	
Language use, sentence con-struction, and paragraph coher-ence	excellent (76-100)	
	good (66-75)	
	fair (56-65)	
	poor (0-55)	
the suitability of the problem with the research title, problem formulation, research objectives, and research significance	excellent (76-100)	
	good (66-75)	
	fair (56-65)	
	poor (0-55)	
the suitability and novelty of theories and concepts to the re-search problem	excellent (76-100)	
	good (66-75)	
	fair (56-65)	
	poor (0-55)	
the suitability of methodology used with research problem	excellent (76-100)	
	good (66-75)	
	fair (56-65)	

	poor (0-55)
the ability to master the research proposal, explain, and give arguments	excellent (76-100)
	good (66-75)
	fair (56-65)
	poor (0-55)
Score Average	

Media Selection. Broadly speaking, media selection is carried out to identify learning media relevant to the material's characteristics. Media selection is based on the results of concept analysis, task analysis, and learner analysis. Regarding the ELTR syllabus design, the learning material is about the methodology in research. Some web applications are used to promote students learning. These apps are *google* scholar, Scopus, Sintakemdikbud, Mendeley, Turnitin, Grammarly, and Quillboot.

Format Selection. Format selection aims to choose a learning approach, strategy, and method that suits problem-based learning. PBL is a model of teaching where students learn to solve real problems. Holding into this pedagogy, the learning approach, strategy, and method is presented in Table 9 below.

Table 9. Format Selection of Syllabus Design

Problem-based Learning	
Approach	Students-centered
Strategy	Discovery learning
	Inquiry learning
Method	Discussion
	Simulation
	Presentation
	Demonstration
	Question-answer

Initial Design. The initial design is the entire design of the ELTR course syllabus that must be done before the trial is carried out. The syllabus prototype is displayed in Table 10 as follows.

Table 10. PBL Syllabus Prototype for ELTR

Week	Expected Final Learning Outcome (Sub-CPMk)	Indicators of Achievement	Learning Materials (Topic)	Learning Model/Syntax	Assessment Criteria

| 5-6 | The students are able to identify the design of quantitative research | 1. Identifying characteristics and purpose of experimental research;
2. Identifying the treats to experimental validity;
3. Identifying the design of Group experimental research;
4. Identifying the design of Single-subject experimental research | **4. Experimental research**
4.1 Group Experimental Research;
4.2 Single-Subject Experimental Research;
4.3 Hypothesis;
4.4 Validity;
4.5 Realibility | Problem-based Learning
1. Orienting the students to the experimental research;
2. Organizing the students to learn experimental research;
3. Guiding individual investigation on experimental research;
4. Developing and Presenting the results on the experimental research;
5. Evaluating the report. | Criteria: Mastering materials, having good attitude, and actively involved in a classroom discussion

Form:
•discussion;
•question-answer
•simulation
•presentation |

3.2 Discussion

The initial design of the syllabus above represents the Problem-based Learning syllabus for the ELTR course. The PBL model is chosen according to the analysis results in Defining stage. One of the advantages of problem-based learning is to enhance critical thinking [14], which, based on the learner analysis, the students lacked. PBL also provides practices in problem-solving ability and communication skills that are required to fulfill graduate learning outcomes (CPL).

The topic discussed in Table 10 is experimental research. The Sub-CPMK expected to be achieved by the students is to identify the quantitative research design, which is, in this case, focusing on experimental research. It is divided into four learning indicators: identifying the characteristics and purpose of experimental research; identifying experimental validity; identifying the design of group experimental research; and identifying the design of single-subject experimental research. The learning model is problem-based learning by involving the teaching method of discussion, question-answer, simulation, and presentation.

A syllabus is a key to communicate teaching practice. The syllabus is concerned on major components of learning, such as learning objectives, learning materials, learning activities to learning evaluation [15]. For that reason, syllabus design must focus on the needs of the students and their learning process.

For the students, the syllabus is the first glimpse of the course. The syllabus also reflects the agreement between the teacher and the students in which responsibilities and expectation is laid on both sides. For this, teachers are expected to interpret,

adapt, and modify their syllabus [16]. Hence, the syllabus is designed to provide the students with a comprehensive notion of how the course will go and how much work it will need.

The design of the ELTR Course syllabus by applying problem-based learning comes from the belief that this teaching model would develop students' higher order thinking skills, particularly critical thinking and problem-solving skills. These skills are required to allow students to understand how to conduct research, particularly in their own professional field. However, PBL is not a 'one size fits all' methodology [17]. PBL is a philosophy and approach that stress the effective use of problems through learning. The starting point of the PBL syllabus is the design of problems followed by developing a learning package compromising guides of learning activities, learning resources, and learning evaluation for both teachers and students.

4   Conclusion

Based on the two stages of defining and designing, the initial design of the PBL syllabus for the ELTR course is done. This prototype PBL syllabus is an alternative solution for the study program to fulfill the needs of the syllabus for the ELTR course. The design starts by defining students' cognitive competency, which will determine the design of learning material, learning indicator, and learning evaluation. Having analyzed the students, the curriculum document is then examined to derive CPL (Graduate Learning Outcome), CPMK (Course Learning outcome of the Syllabus), sub-CPMK (Sub-Course Learning Outcome of the Syllabus), and Indicator. These instructional tasks are ingredients to design learning evaluation, learning media, and appropriate teaching methods for the PBL syllabus.

The syllabus indicates the goal, contents, and views of a course that reflects the quality of learning. The design of the PBL syllabus for the ELTR course is expected to serve as a model or inspiration for the next product. This initial syllabus needs to be taken to test whether the designed syllabus is valid, effective, and practical enough to be applied in ELTR course learning. Hence, the final version that incorporates all of the fundamental features of the syllabus could be developed to acquire the desired graduated profile of EFL teachers.

References

1   R. Ellis, *Language teaching research and language pedagogy*. John Wiley & Sons, 2012.

2   B. Allison, A. Hilton, T. O'Sullivan, A. Owen, and A. Rothwell, *Research skills for students*. Routledge, 2016.

3   E. Wright and A. Wright, *Thinking skills*. 2011. doi: 10.4324/9780203813805-29.

4   L. G. Snyder and M. J. Snyder, 'Teaching critical thinking and problem solving skills', *The Journal of Research in Business Education*, vol. 50, no. 2, p. 90, 2008.

5   Menteri Pendidikan dan Kebudayaan RI, 'Keputusan Mendikbud RI tentang Indikator Kinerja Utama pada Perguruan Tinggi Negeri dan Lembaga Layanan Pendidikan Tinggi

di Kementerian Pendidikan dan Kebudayaan', *Jakarta, Indonesia: Biro Hukum Ke-mendikbud*, pp. 1–4, 2021.

6   E. Purwanti, ' Preparing the Implementation of Merdeka Belajar – Kampus Merdeka Policy in Higher Education Institutions ', vol. 518, no. ICoSIHESS 2020, pp. 384–391, 2021, doi: 10.2991/assehr.k.210120.149.

7   Z. Zhou, 'An Empirical Study on the Influence of PBL Teaching Model on College Students' Critical Thinking Ability', *English Language Teaching*, vol. 11, no. 4, p. 15, 2018, doi: 10.5539/elt.v11n4p15.

8   N. Othman and M. I. A. Shah, 'Problem-based learning in the English language class-room', *English Language Teaching*, vol. 6, no. 3, pp. 125–134, 2013, doi: 10.5539/elt.v6n3p125.

9   F. M. Mishan, 'Whose learning is it anyway? Problem-based learning in language teach-er development', *Innovation in Language Learning and Teaching*, vol. 5, no. 3, pp. 253–272, Nov. 2011, doi: 10.1080/17501229.2010.548558.

10   E. M. Guthrie and K. Krahnke, *Approaches to Syllabus Design for Foreign Language Teaching*, vol. 73, no. 1. 1989. doi: 10.2307/327275.

11   H. S. BARROWS, 'A taxonomy of problem-based learning methods', *Medical Educa-tion*, vol. 20, no. 6, pp. 481–486, 1986, doi: 10.1111/j.1365-2923.1986.tb01386.x.

12   J. Smith, 'Developmental Research', *Safflower*, pp. 142–184, 1996, doi: 10.1201/9781439832080.ch6.

13   S. Thiagarajan, 'Instructional development for training teachers of exceptional children: A sourcebook.', 1974.

14   D. Rakhmawati, 'Advantages and Disadvantages of Problem Based Learning Models', *SHEs: Conference Series*, vol. 4, no. 5, pp. 550–554, 2021.

15   H.Douglas   Brown, '[H._Douglas_Brown]_Teaching_by_Principles,_Second_(BookFi.org).pdf', *Teaching by Principles An Interactive Approach to Language Pedagogy*. p. 491, 2000.

16   D. Nunan, 'syllabus design - Nunan.pdf', pp. 187–192, 1988.

17   O.-S. Tan, *Problem-based learning innovation: Using problems to power learning in the 21st century*. Gale Cengage Learning, 2021.