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Problem-Based Learning Approach for Elementary Schools

Enfoque de aprendizaje basado en problemas para escuelas primarias

E. SULASMI

<https://orcid.org/0000-0002-4057-2981>

emilda@umsu.ac.id

University of Muhammadiyah Sumatera Utara, Medan, Indonesia

A. AKRIM

<https://orcid.org/0000-0002-3984-9242>

akrim@umsu.ac.id

University of Muhammadiyah Sumatera Utara, Medan, Indonesia

M. SARAGIH

<https://orcid.org/0000-0003-1385-418X>

mandrasaragih@umsu.ac.id

University of Muhammadiyah Sumatera Utara, Medan, Indonesia

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ABSTRACT

The purpose of the study is to find out and develop a suitable learning model aimed for elementary school learners to ensure a quiet learning environment. This study applied a qualitative and quantitative method and further employed research and development methods. The study was carried out in two different stages; exploration and experimental studies. Meanwhile, through purposive sampling, the subjects chosen for the analysis included 50 learners, thirteen educational tutors, and six people from the literacy program management. The study's result indicated that problem-based learning contributed to the increase in literacy rate in an entrepreneurship literacy program.

Keywords: Problem-based learning, literacy, competency, adult learners.

RESUMEN

El propósito del estudio es descubrir y desarrollar un modelo de aprendizaje adecuado dirigido a los estudiantes de la escuela primaria con el fin de garantizar un entorno de aprendizaje tranquilo. Este estudio aplicó un método cualitativo y cuantitativo y además empleó métodos de investigación y desarrollo. El estudio se realizó en dos etapas diferentes; exploración y estudios experimentales. Mientras tanto, mediante un muestreo intencional, los sujetos elegidos para el análisis fueron 50 alumnos, trece tutores educativos y seis personas de la dirección del programa de alfabetización. El resultado indicó que el aprendizaje basado en problemas contribuyó al aumento de la tasa de alfabetización en un programa de alfabetización empresarial.

Palabras clave: Aprendizaje basado en problemas, alfabetización, competencia, estudiantes adultos.

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INTRODUCTION

Education permits one's access to knowledge, attitude, and skills qualifications, allowing the person to have a meaningful life change (Bandy: 2017). An effort toward education enlargement can provide a better life since it gives people hope (Central Asia Institute: 2017). UNESCO (Unesco: 2015) believes that education, in general, means an effort to develop human potentials into something functional as a response to life's challenges. This is in line with the 1945 Constitution of the Republic of Indonesia article 31 (1), which states that "every citizen has the right to education" and article 28 B (1) which also states that "every person shall have the right to develop him/herself through the fulfillment of his/her basic needs, through the right to attain education and to benefit from science and technology, arts and culture, to improve the quality of his/her life and for the welfare of the human race".

Based on the statements mentioned above, education is a part of human rights that aims to develop learners' skills (Robinson et al.: 2020, pp. 220-241). Education can increase the quality of life of an Individual. On the contrary, with higher illiteracy rates, the situation of a community can be worse. Illiteracy affects the life-chances of the individuals and society at large (Gunawardena: 1997, pp. 595-609) because it deters the development of individual competencies. However, though the low literacy level affects life-chances (Gunawardena: 1997, pp. 595-609), for Indonesia, illiteracy is still among the modern challenges the country faces. There are still many pockets of illiteracy found across the archipelago with low reading skills tendency in several regions. The low reading skill is caused by education inequality (Christine: 2018). It is illustrated in Indonesia's Human Development Index, a summarised measure that examines long term progress regarding the three primary aspects of human development (HDR: 2019). The country's HDI value for 2018 stands at 0.707, automatically shifting Indonesia's status into a high human development category, ranked at 111 out of 189 countries and territories from across the globe (HDR: 2019). Since access to knowledge is an act of education, educational factor and illiteracy are a major which contributes to the low ranking of a country's human resources. It is upon this that the present paper discusses the "problem-based learning approach for elementary schools as an approach to attaining the required literacy competencies by a country." The intention is to describe the efforts made in the struggle to develop a competent citizenry through compulsory education.

As the manifestation of the national movement, an intensive illiteracy eradication effort was applied to target an increase of 50% of adult literacy, i.e., starting those with 15 years old and women, support with the effort to provide equal access to education for all (Jalal & Sardjunani: 2006, p. 131). Thus, the illiterates' educational services have been and continue to be conducted through the literacy education program. Literacy education is an effort to achieve people's fundamental rights of education as a part of realizing human rights. Regarding this definition of literacy, many entrepreneurship literacies programs have been coined and implemented with the desire to empower the grassroots communities. In this paper, the author presents an entrepreneurship literacy program that aims to empower illiterates aged 14 years and above by improving their knowledge, attitudes, and skills like the basics for individual competency development (Maria, 2020, PP. 9-18; Mehboob & Othman, 2020, PP. 1-8).

This paper is based on the fact that in Indonesia, the implementation of the entrepreneurship literacy program is still limited due to the poor strategies and approaches in place. The challenges include: the use of traditional methods such as lecturing during the training and learning process; facilitators-dominate in the decision-making process; the entrepreneurs are limited business knowledge and skills; and there is also limited network, coupled with inadequate capital due to poverty. This study aims to develop a learning model that can empower people's literacy skills and accommodate their business in regards to the conditions.

Entrepreneurship, as one of the empowerment programs, focused on the learners' experience, its basis for success is the content as the significant aspect of the program for business empowerment. From the description above, it is, therefore, assumed that the suitable approach for the literacy learning program is Problem Based Learning. The author investigated to analyze and establish an appropriate description concerning the problem-based learning model for literacy competency development. The study has been limited to how the application of problem-based learning contributes to literacy competency achievement.

LITERATURE REVIEW

The Indonesian Law on Education, states that education is a right of every citizen as a fundamental component of life development despite one's condition. Those who cannot access formal education, for example, still have the opportunity, because the Government has provided three different choices, namely: formal education, non-formal education, and informal education. The three mentioned education subsystems lead to the same national goal of educating the nation's life and improve the quality of Indonesians to realize a society that is advanced, fair, and prosperous (Rosser: 2018).

Additionally, there are more many articles in the Indonesian law on education that further explain the education system and broader literacy competency development. For instance, article 26 paragraph (2), explains that education is aimed at developing learners' potentials with emphasis on acquiring knowledge and functional skills and developing personality and professional attitudes. Following paragraph (2) is an explanation regarding the content of non-formal education which is further described in paragraph (3) which comprises of life-skills education, early childhood education, youth education, women empowerment education, literacy education, literacy education, vocational training, and internship, equivalency programs, and other kinds of education aimed at developing learners' abilities and skills. Finally, paragraph (4) describes types of non-formal education such as training centers and colleges, study groups, community learning centers, Islamic study circles or groups, and other education units of a similar purpose and objective. Thus, Indonesia's education is a structured education system that has a similar purpose and function. However, there are slight differences between the formal non-formal and informal education subsystems.

Nevertheless, the learning process of non-formal education is comparable to the formal education process. According to Gagne (Gagne: 1984, p. 377), learning means a changing process in behavior constructed based on the learning outcomes. Driscoll (Driscoll: 1994) asserts that learning is a continuous change in human performance alongside their potentials. Talking about behavioral changes, Davis and Luthans (Davis & Luthans: 1980, pp. 281-290) argue that learning is a relatively permanent change as a practical function of experience. It also means the efforts of experiencing, exploring, searching, and acquiring knowledge on one's own.

This paper focuses on the analysis of literacy skills for competency development in education. Since the present paper looks at problem-based learning in developing competencies of learners to achieve a nine years compulsory education program, the learning modeling concept used is that which is suitable for learner's self-reliance, hence examining the adult learners' concept of andragogy. Andragogy is a Greek word, which means adults and agogos, referring to leading or guiding.

As mentioned in the introduction, this study's focus is gaining literacy competencies for improved capability, which is deemed necessary in the social activities and business life of individuals. The success of a country's development program is at least determined by the citizen's reading abilities. Illiteracy can restrain the country's development agenda; thus, the literacy rates of a country must be solved urgently. Illiteracy is a condition where one cannot write and read a simple sentence found in daily life. Nurhadi (Nurhadi: 2014) argues that literacy is broadly defined as the necessary knowledge and skills required in a rapidly changing world as part of human rights. He further elaborates that literacy is the catalyst for social, cultural, political, and economic and community empowerment participation, as well as a learning facility for lifelong learning (Nurhadi: 2014). Robinson, Phillips, and Quennerstedt (Robinson et al.: 2020, pp. 220-241) refer to literacy as a human right needed to advance society. Illiteracy is a severe pandemic that is a topic of discussion throughout the world, not only in developing countries but also in industrialized countries, since it is the mother of many social evils, including poverty, unemployment, conflict, and pressure, along with social stratification.

The literacy program itself is purposely aimed to improve people's ability, comprehension, and self-adjustment to overcome life challenges (Zein et al.: 2020, pp. 491-523). Generally, literacy seeks to build a society by changing the individual and community by providing equal opportunity and global justice. From this perspective, all parties' literacy issues should become a concern by deploying all resources and methods required. Literacy is also part of the primary education structure targeting a broader society, including the educated and uneducated members. In a further development, conventional literacy education is developed into functional literacy education. According to UNESCO (Unesco:1987), literacy means writing, doing

arithmetic, and doing simple reading in daily life. Meanwhile, functional literacy is defined as the ability to use literacy skills effectively for creating better conditions.

METHODOLOGY

This study employed a mixed-methods research approach that focused on a learning design that aims to improve learners' entrepreneurship literacy skills through problem-solving as one of improving the learners' competencies. For the study's execution, the author applied a few procedures from a research and development method (R and D). According to Gall, Borg, and Gall (Gall et al.: 1996), R and D is a research method to design or improve a product. To be specific, a few elements were borrowed: the exploratory study stage (preliminary study) and the model development stage. The first phase of the preliminary stage was intended to obtain an overview of the problems as well as the resources related to the program. The second stage involved formulating the conceptual design regarding the problem-based learning approach concerning competency standards improvement.

The study was conducted in South Kalimantan, focusing on the selected areas of Banjarmasin city. The subjects were 50 respondents aged between 14 to 60 years, 14 tutors, and six participants in the literacy education program were learning material participants. This study adopted the purposive sampling method to decide the study's sampling, while the data source consisted of primary and secondary data. Primary data were obtained directly from respondents through interviewing and direct observations during the study. On the other hand, secondary data obtained from various data that served to complement the primary data provided by formal and non-formal institutions.

This study was conducted to develop a learning design that improves literacy skills competencies. The application of the design included a series of tests to produce a final and recommend the design. The quasi-experimental method, through pre-test and post-test designs against the treatment-treated trial group, was employed during the test. The preliminary study was conducted qualitatively through exploratory study, conceptual modeling design, conceptual design verification, limited trial, a field test of the design, and evaluation of its implementation. In the second trial, the activities included implementing a revised design using a quasi-experimental pre-test and post-test design in a single-group Pretest-Posttest design. Finally, there was a comparison of the pre-test results with the post-test results in the piloted group without using the control group. The result of the analysis indicated an improvement in the literacy skills of the participants.

RESULTS

The Description of Learning Environment

Similar to formal schools, non-formal schools provide a conducive learning environment that supports the learning process. The system emphasized knowledge construction, and every individual learns actively on his responsibility. Individual construction is believed to be more reliable than groups. However, group discussions were able to solve proposed trial challenges comfortably and in a friendly manner. The response to the process and the performance was based on the idea that a facilitator in the learning process helps to observe the different mindset during the performances; observe the right time to intervene in the activities; position themselves as the learners without actively participated in the process.

To support the implementation of the learning design, several supporting tools were established, such as the open-ended bank of problems, lesson plans consisted of Problem Based Learning principles combined with a cooperative approach, learning materials that addressed everyday issues, and learning assessments that recognized the necessary literacy skills of the learners.

The Planning Step

The steps taken in preparing and planning an entrepreneurship literacy program using the problem-based learning design included research coordination with the managerial partner, tutor training, learning program preparation, requirements observation, and syllabus along with tools and teaching materials preparation. First, the study began coordinating time, schedule, subjects, curriculum, media, and learning method with the literacy program party.

The Implementation Step

The implementation of the problem-based learning design involved learning programs and learning management. The learning program, widely known as curriculum, contained learning strategies, learning materials, media and facilities, and learning evaluation. On the other hand, learning management was strongly influenced by the competency of learning tutors, managerial crew, and citizens. More importantly, the literacy program was conducted for two months. Problem Based Learning applied in entrepreneurship literacy program started with a real problem associated with mathematical concepts that will be conveyed. After that, all of the information gained through a review of the materials and the teamwork to solve the given problems. During the practice, the implementation focused on two main components, that is learning support and learning management.

The Evaluation Process

In most cases, the entrepreneurship learning assessment procedure referred to the Technical Guidance of Literacy Education Assessment established by the Directorate of Community Education, Directorate General of PNFI of the Indonesia Ministry of Education (Abdurrahman: 2020). However, assessment in this program was performed by the tutor during each stage or even the practitioner of the program. As for the evaluation process, the following points were the element which mostly included in the assessment process: learning evaluation, learning outcomes, the program's objectives, the principles, the evaluator, assessment aspects, assessment tools, certificates, and mentoring.

The Effectiveness of the Learning Design

Based on the 50 people sample, the pre-test score had an average of 11.05, with a standard deviation of 3,942. After the implementation of problem-based learning, the post-test score was 14.58, with a standard deviation of 3,500. The result proves that problem-based learning design has a significant effect on the literacy rate in Banjarmasin. In other words, the implementation of the problem-based learning model was successful. The correlation coefficient between the learning score before and after the employment of problem-based learning obtained value equal to 0,890, and since $\alpha = 0,05 > \text{Sig } 0,000$. It means the significance is at a 95% confidence level. These results point out that entrepreneurship literacy skills depend on learners' improved competencies.

DISCUSSION

Entrepreneurship literacy education was an activity to enhance individual and group productivity through achieving necessary literacy competencies. The program's intended objects were people who have completed and gained essential literacy competencies, mostly adults who contrast to children. Besides, the learning strategies conducted to achieve the learning objectives were supported by the literacy education principles, which are: Local design, Local context, Partnership, and functionalization. Apparently, by looking at these four principles, literacy learning was inseparable from an adult's daily life, so that literacy learning materials were functional for each learner. Thus, a suitable learning method refers to a method that can develop

learners' personalities in the right way. It is illustrated by the ability to express opinions, participate actively, possess high motivation, and be active in doing assignments, whether individually or in groups.

Central Asia Institute (Central Asia Institute: 2017) argues that the learning method can be explained through systematic procedures to teach adults to achieve the intended learning objectives. The literacy learning method applied during the lesson acted as an effort to simplify the process. It is in line with Bandy, J. (Bandy: 2017) statement regarding the andragogy approach and curriculum. He also mentioned that all strategies and methods are fundamentally right and can be adapted by the tutor during the lesson; yet, none of them was perfect since each strategy and method have its advantages and disadvantages. By now, there was a tendency to change literacy education to become more learner-centered, especially to scrutinize people's needs (Brookfield: 1984). Therefore, literacy education must prepare learners with extensive life knowledge and skills.

To discover the precise demands of citizens towards literacy education, it was necessary to employ an appropriate model based on literacy learning principles, such as problem-based learning. According to Jalal and Sardjunani (Jalal & Sardjunani: 2006, p. 131), problem-based learning is qualified with several characteristics: problem-oriented and tutor as a facilitator rather than the teachers. Although problem-based solving was not an entirely new approach, the interest in the approach was progressing rapidly, especially for democratic societies and grassroots communities (Nurhadi: 2014; Alam & Shakir, 2019, PP. 16-21). The problem based solving design was a part of the educational model established by Piaget and Vygotsky using the theory of constructive learning. The basis of this theory was the assumption that knowledge is the result of social construction. Humans constructed their knowledge through their interactions with objects, phenomena, experiences, and environments HDR. (HDR: 2019). Through problem-solving design, the knowledge possessed by citizens occurs through social interaction. Knowledge itself consists of two different perspectives. First, spontaneous comprehension is gained from daily life experience, while the scientific sense is derived from the formal learning system that is logically defined on a broader system.

In this study, the learning outcomes were measured by evaluating the effectiveness of the problem-solving design. By measuring its effectiveness, the result points out whether this learning design has worked or not—competency development based on the measurement outcome in learning used much by employers. Just like Gagne (Gagne: 1984, p. 377) mentions, learning means a changing process in behavior that is constructed based on the learning outcomes. Utami and Sabri (Utami & Sabri: 2020, pp. 1-20) believes that the problem-solving method is not limited to teaching alone, but also includes critical thinking, which is a particular component of job performance. This influences one's effectiveness, which is considered as the value of achieving a goal. Ideally, the effectiveness levels are expressed with specific measures. Effectivities contain an understanding of the occurrence of the desired effect or another effect. If a person commits an act with a specific desired intention, then the person is said to be effective if what he causes the desired consequences.

Effectiveness refers to the ability to achieve set goals. It is also concerned with the benefits of the obtained results, the level of power, as well as the client satisfaction level. The effectiveness of problem-based learning has a significant influence on improving entrepreneurship literacy competence based on the statistical test. The results of the competencies were measured on the knowledge and skills aspects, while the attitude changing did not include in the measurement. Bloom explained in his learning taxonomy, three different learning outcomes: cognitive domain; sufficient domain; and motor skill domain.

The analysis results showed that entrepreneurship literacy competence using problem-based learning has more excellent value compared to conventional learning. At the same time, the result of the analysis also acted as achieved competence. Spencer and Spencer (Spencer and Spencer: 2008; Umejiaku, 2020, PP.24-34) categorize competency in two forms: threshold competencies and differentiating competence. Threshold competencies are the essential characteristics to become competent in a job but not to distinguish from the average, whereas differentiating competence distinguishes learners who have advance skills from the rest of individuals.

CONCLUSION

The purpose of the study was to develop a learning design suitable for improving the learners' literacy competencies. Literacy means the ability to read, write, and do arithmetic and reading comprehension regarding the materials and symbols—the implementation of problem-based learning involved in planning, implementation, and evaluation stages. The planning stages outlined the research coordination with the managerial crew, literacy tutoring, learning program preparation, requirements observation, all syllabus, widely known as lesson plan preparation alongside teaching materials and facilities preparation. Then, the implementation of learning took place in the classroom, similar to formal education. On the other hand, the implementation of PBL was set in a learning program and learning management. The curriculum contained learning strategies, learning materials, learning media, and learning evaluation, while the management of learning was strongly influenced by the ability of tutors, practitioners, and adult learners. The evaluation was done by assessing all the learning outcomes.

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BIODATA

E. SULASMI: Emilda Sulasmi is a lecturer in the postgraduate program University of Muhammadiyah Sumatera Utara. He received an undergraduate degree (S.Pd) in Biology education program from the University of Muhammadiyah Bengkulu in 2006 and a Master's degree (M.Pd) in Education Management from the University of Bengkulu in 2019 and a Doktor's Program in Education management from the State University of Jakarta in 2016.

A. AKRIM: He is deputy rector II of University of Muhammadiyah Sumatera Utara and lecturer in the Department of Islamic early childhood Education. Faculty of Islamic Religious. He received an undergraduate degree (S.Pd) in education from the University of Muhammadiyah Sumatera Utara in 2003 and a Master's degree (M.Pd) also in education obtained from State University of Medan in 2008 and a Doktor's Program in Islamic Education from State University Muhammadiyah of Malang in 2020.

M. SARAGIH: Mandra Saragih is A Head of the English Education Program, Faculty of Teacher Training and Education, University of Muhammadiyah Sumatera Utara. He is also an English Lecturer who concerns with teaching Linguistics arena and teaching speaking. He received an undergraduate degree (S.Pd) in English education program from the University of Muhammadiyah Sumatera Utara in 2008 and a Master's degree (M.Hum) in English applied linguistics from the State University of Medan in 2013. His main research field is linguistics and education, especially sociolinguistic, and English education programs.

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