The design of literacy environment model in primary school

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Abstract. This research is motivated by the problem by the lack of a fixed model on how to support learning environment that can be beneficial for the development of literacy skills of primary school students in the early grade. The aim of this study is to create a legitimate basis for the development of environmental design and literacy learning for early childhood and early grade of primary school students. This study discussed the development of a model that would equip teachers with certain important aspects of the literacy environment that are suitable to be applied in primary schools. This study employed Educational Design Research. There were several stages employed in this study: conducting a literature study of the essential environment by reviewing the available models, comparing and contrasting the differences between the models from the learning environment available in the literature, deciding the model components of an essential literacy environment, and trying to create a theoretical model and prototypes. The results of this research suggest that the design of a literacy learning environment model should be used as a guide in developing literacy skills of primary school students in the early grade.

Keyword: Literacy environment model, early literacy, early grade, primary school.

1. Introduction

One of the ways to improve students’ early literacy skills can be done by designing literate learning environment models. The environment has long been suspected of being the key to success. This way ideally starts from the very first environment, home. According to [1a], there is a distribution of literacy (literacy disparity) between children who come from literate and rich-print home environments with those from "disadvantaged" families. At practical level, the format of the literate environmental design model at home and at school is still relatively not optimal in providing support for the development of a literate environment to improve students’ early literacy skills. On a more specific level, the main issue that becomes the focus is the lack of a clear model of how to support a learning environment that can be used as a guide in developing early literacy skills for elementary school students in the early grade. Based on these problems, it is necessary to design a potential literacy environment learning model to develop students’ literacy skills in the early grade of elementary schools.

2. Methods

The method employed in this research is Educational Design Research. It is a systematic study of the activities of designing, developing and evaluating educational interventions (such as programs,
strategies and learning materials, products and systems) as solutions to solving complex problems in educational practice with the aim to get more knowledge about the characteristics of these interventions and their design and development processes [2a]. Meanwhile, according to [3a] design-based research is not so much an approach as it is a series of approaches, with the intent of producing new theories, artefacts, and practices that account for and potentially impact on learning and teaching in naturalistic setting.

The stages of this study [2b] are as follows.

a. Analysis of practical problem
This is the initial stages where the researcher conducted a problem analysis so that the problems about the lack of student literacy skills were found afterwards. It might be caused by the absence of environmental design that supports the development of literacy skills, especially the students' early literacy skills.

b. Development of prototype solutions
This is the stage to design the development of literacy learning environments. At this stage, the focus is on formulating the design of the literacy environment model as the results from comparing and contrasting the relevant theories and then deciding the model components of an essential literacy environment by Focus Group Discussion (FGD). The next activity was determining the research subject, the time and place of research, literature study, and preparation of instruments: observations, interviews, and tests, also preparing teaching materials, and learning devices.

c. Iterative cycles of testing and refinement of solutions in practice
At this stage, I tried to make and apply the prototype model. This stage aims to carry out extensive testing in the field through observation, interviews, and tests. Observations were done to see the implementation of the stages of the model in the classroom. The stages in this activity were, (1) designing and preparing the initial draft design of the literacy learning environment model, (2) limited testing of draft models in grade 2 of elementary school, (3) evaluation and revision of the results of the implementation of the draft model 1 (4) draft test on model 2, (5) evaluation and revision of the results of the implementation of the draft model 2, (6) validation of draft models by experts and practitioners through FGD.

d. Reflection to produce ‘design principles’ and enhance solution implementation
This is the final stage in this research. It is intended to produce new design products that can improve the implementation of solution. Besides, the results of the field studies were consulted and discussed with counsellors and experts to obtain a comprehensive description of the problems that were intact in the field which finally resulted as formulated solution.

3. Result and Discussion
3.1. Concept of Literacy Learning Environment

The literature review in this study is focused on the ecological system theory for human development from Urie Bronfenbrenner. According to Bronfenbrenner [4], the environment is composed of structured arrangements, each of which is complementary and sequential.

According to [5a], they state that the function and human development are the result of complex reciprocal interactions between people who are active and develop bio-psychologically (onto system) with the environment, which is understood as four compiled 'layers', namely layers of microsystems, mesosystems, ecosystems, and macrosystems, each of which consists of people, objects, and symbols. In addition, [5b, 7a] also introduce chronosystem which is described as a system that covers the time dimension that is related to one's environment.

The microsystem is the circle that is closest to children which includes activities and patterns of direct interaction of children with their immediate environment such as parent interactions, family members including younger and older siblings, schools, peers, toys and relationships / interactions and roles in the family, social workers, as well as institutions that interact regularly with children [5c, 8, 7b].

In regards to this theoretical framework, the class is what influences students' development through interaction with the context of the learning environment in the form of physical material and the context of the social environment where students spend half of their time with their teachers and peers. The focus of this research is to design a social learning environment model that can develop students' early literacy skills in the early grades.

According to [1b], the literate environment is defined as an environment that equips children with literacy demonstration, literacy engagement, and literacy support. The form of activity in literacy demonstrations is that children see their parents reading books, newspapers, and magazines to get entertainment and information, and then listen to them talking about what they already read. The form of literacy engagement activities such as children routinely read, engage in interactive discussions and literacy practices that are enabled by the access they have to various readings (children's books in genre and magazines) and various writing instruments (pens, markers, pencils, crayons, chalk, etc.) and lots of paper. Meanwhile, the form of literacy support activities is children are encouraged to explore their world and express their feelings using all the means available to them [1c].

Based on these explanations, the literacy environment is an environment that not only has room arrangements (layout of goods, seating, books, and other materials), but also has an environment that enables literacy learning activities in the form of demonstrations, engagement and support who are rich in information, psychological support, and full of values.

3.2. Types of Literacy Learning Environment

3.2.1. Physical Environment.

There are several key aspects of the physical literacy environment associated with children's learning [9, 10]. These include literacy-related books and materials (books that are available in the library and class materials such as puzzles and teaching aids, for example, a menu list), writing materials (e.g. stationery, pens, markers, pencils and writing media for example, striped paper, construction paper), print environment (labels, charts, names and displays), technology (computer and computer games related to literacy; audio center), use of literacy materials (how many children spend time using literacy and writing materials). The physical environment relates to the setting and fulfilment of physical material such as seating arrangements, fulfilment, and arrangement of books, newspapers, magazines, pencils, pens in class, in libraries, structuring reading centers, writing centers, and other material arrangements that support the development of literacy skills.

3.2.2. Informational Environment.

The informational environment is related to content that is rich in information from literacy activities involving students, for example, storytelling activities and teacher conversation activities in the classroom. According to [11], teachers must find a way to make the classroom interaction rich in conversation, and the class has also to involve children in conversations in large group settings, small
groups, and individuals who are rich in knowledge about the world. The forms of literacy activities that can be developed to support the development of early literacy skills such as storytelling and book sharing.

3.2.3. Phycological Environment.
The psychological environment is one of the learning environments that can be developed in supporting the development of students' early literacy skills. The psychological environment plays a role in motivating students through the quality of the close relationship between teachers and students [12a]. Furthermore, according to [13, 12b], students who get limited emotional support in the form of sensitivity, a positive classroom atmosphere (laughter, pleasant conversation, and enthusiasm for learning) from the homeroom teacher have significantly lower abilities at the standard reading step.

3.2.4. Ideological Environment.
The ideological environment is one of the important factors in the classroom. In the concept of 'neutral', ideology can be considered as 'systems of thought,' 'belief systems,' or 'symbolic systems' related to social actions or political practices [14, 15]. The ideological environment has a strategic role in building positive values for students. The ideological environment can be in the form of dialogue or teacher speech that contains a value as an effort to develop students' early literacy skills. These values are related to religious values, ethical values and cultural values that are used as the basis by the teacher to develop students' early literacy skills.

3.2.5. Social Environment.
The social environment is an environment where social interactions between students and students and/or students and teacher occur. Vygotsky emphasized that children interactions with more skilled adults and peers cannot be separated from their cognitive development [16]. The learning environment in a social constructivist perspective is designed to provoke thoughtful involvement that helps students develop thinking skills and attitudes that contribute to effective problem solving and critical thinking [17a]. The student-centered environment where the focus is on democratic student learning as far as the division of responsibility and involvement in decision making is concerned [18]. Therefore, environmental support is needed to develop students' skills. In a social constructivist perspective, the main topics are known, namely Zone Proximal Development (ZPD) and scaffolding. The term Zone Proximal Development (ZPD) refers to "the distance between the actual level of development as determined by independent problem solving and the level of potential development as determined through problem-solving under the guidance of adults, or in collaboration with more capable peers" [19]. While scaffolding is the support given for certain learning tasks, with clear goals, about the willingness of teachers to help students develop certain skills, obtain certain concepts or reach a certain level of understanding [20a].

3.3. Design of the Learning Environment Model to Promote Literacy in Primary Schools
In the context of this study, the important components that will be used as the main component of designing a model of literacy learning environment based on social constructivist perspectives are based on the results of analysis and synthesis of learning environment theory and social constructivist theory. The design of this model aims to help develop early literacy skills of elementary school students in the early grade. The important components of the design of a literacy learning environment model based on social constructivist perspectives include the four components articulated below.

3.3.1. Providing Context.
In a sociocultural perspective, the context is broadly discussed which includes activities, goals and texts or discourses, to examine what in this case is the practice of literacy in the classroom and its influence on the development of knowledge [21]. Vygotsky points out that the heart of learning depends on motivation for learning [22a]. For example, when determining the purpose of initial reading, which is to recognize letters, students will learn about early reading, before continuing to advanced reading with different objectives.
3.3.2. **Modelling.**

Scaffolding strategies applied in the classroom is where the tasks requested from students can reduce their complexity strategically. In this case, the form of teacher scaffolding is in the form of modelling. It is the teacher's attempt to think hard or act on how he will approach problems, guide, and advice, which is freely defined as an effort to advise students of various levels of simplicity [23]. According to [24], there are at least six successful scaffolding features, including: (a) recruiting interest in the task; (b) reducing the level of freedom in the task to make it manageable by tutee; (c) maintaining direction of goals; (d) marking important features; (e) controlling frustration; and (f) modelling solutions for the task.

Furthermore, [25] defines scaffolding in learning as a gradual withdrawal from adults, for example, teachers support through instruction, modelling, questions, feedback, etc. According to [22b], they argue that the form of scaffolding that is useful is to model the practice of reading that is desired by students. Modelling helps students to see what it means to enter a dialogue with the text. In line with this, the form of scaffolding according to [26] state that teachers must explain (explaining), model (modelling), and use practical guidance (guided practice) in the classroom. By modelling what students want to do, students will be better at doing assignments assigned by the teacher. The examples of modelling activities are modelling on initial reading, reading aloud, and modelling initial writing.

3.3.3. **Dialogue.**

Vygotsky, the father of constructivism, claims that learning takes place through dialogue [22c]. This dialogue was originally instrumental - this happened between teacher and student, between students, or even between text and readers [22d]. According to [27], they state that through language children have been involved in dialogue where ideas are heard, shared, and criticized. This activity provides a sharing experience directly to stimulate discourse. Activities also provide opportunities for children to explain and produce knowledge. According to [28], social dialogue that helps transmit the meaning of words to children and also gives the child the opportunity to apply those words in situations that require more reasons. He claims that early childhood teachers and other people can improve children's language and the development of reasoning by improving their own dialogue, asking questions and talking with children.

According to [17b], features of social constructivist approaches are: 1) active construction of knowledge based on experience with any prior knowledge of the physical and social world, (2) emphasis on the importance of ZPD, (3) emphasis on the influence of human culture and the socio-cultural context, (4) recognition of knowledge from social constructs obtained through dialogue and negotiation, (5) emphasis on subjective constructs of knowledge and 6) interpretation of multiple knowledge and as a summary. Examples of dialogue activities can be done by collaborative discussions between students and students, or students with teachers, such as dialogues about storybooks by asking questions about the contents of the story or having a dialogue about the experience.

3.3.4. **Engagement.**

Language as a basic learning resource is exploited in teaching situations, listening, observation, and action. However, it is also involved in conversations with adults (parents, teachers) and peers, to support better understanding [20b]. Other engagement as stated by [29] are portrayed in various activities such as students actively participate in joint activities and engage in class discussions which aimed at sharing ideas and experiences and exploring and challenging understanding of each other. In this case, to develop the skills of students at school and at home, they have to get involved in literacy activities such as conversations with parents, teachers, as well as peers, and involved in various opportunities working on literacy tasks such as discussion, reading, writing, and other academic assignments.

3.4. **The Syntax of Literacy Environment Design Model**

The description of the syntax of the application of DECM literacy environment design model for the development of early literacy skills in the classroom is portrayed in the figure below.
3.4.1. **Provide Context.**
In this activity, the teacher determines literacy learning goals. For example, in early writing learning, learning objectives are adjusted to the curriculum in the school. This activity can be carried out in large classes. At the same time, the teacher can also motivate students to learn on how to write well. Furthermore, the initial writing activity can also be contextualized with real activities in student life. In addition to writing, in reading activities, provision of context can also be done. For example, when reading, students need a clear idea of why they are reading and how to improve text content with their experiences. This is done so that students understand that writing skills can be related to other aspects and can be useful for everyday life.

3.4.2. **Modelling.**
In this activity, the teacher gives examples and guides student literacy activities such as in the initial writing activity. The teacher exemplifies and guides how to write correctly in accordance with the expected indicators in the curriculum. The teacher can also model how to read the correct one. Dialogue activities can be done by giving examples to all students in large and individual classes. This is done so that students can do their work in accordance with what the teacher exemplifies. Modelling can also be done by involving students who have better abilities in writing or reading to give examples to their peers. Modelling can also be in the form of behavioural modelling, for example, modelling of text reading activities every day at home and at school.

3.4.3. **Dialogue.**
In this activity, the teacher dialogues with students by giving a number of questions about the topic of learning or about the experience of students. The teacher can manage students to have a dialogue with their peers. For example, in the shared book experience, the book is discussed together in large classes, as well as in small groups between students. In addition, dialogue activities can also be carried out through socio-drama. This dialogue is useful for exploring his knowledge, constructing old knowledge into new knowledge, and by dialogue can stimulate students to think critically.

3.4.4. **Engagement.**
In this activity, students are involved in literacy activities freely by giving independent tasks, for example, by involving students to read other books in class, in the library, or at home. Involve it in everyday conversations with adults. Students can also be involved in free and contextual writing activities, such as writing home phone numbers, writing home addresses, or writing experience stories.

3.5. **Early Literacy Skills in Primary School**
The framework for developing the teaching of early literacy is based on Vygotsky's learning theory, which emphasizes the nature and importance of social interaction in teaching, especially between adults.
and children [30]. Early literacy skills in the first grade of elementary schools include early literacy activities, namely practicing arranging letters into a sentence and writing sentences in regular activities such as writing in a daily journal. In the second grade, students must be able to put sentences together in the form of stories using basic signs and correct capital letters. In third grade, the goal is to complete paragraphs, starting from a topic of sentences, describing a bit of a sentence, and summary sentence [31].

4. Conclusion
The literacy environment is an environment that not only has room arrangements (layout of goods, seating, books, and other materials), but also an environment that enables literacy learning activities in the form of demonstrations, engagement, and support that is rich in information, psychological supports, and full of values. The learning environment in a social constructivist perspective is a student-centered and democratic learning environment which is designed to provoke thoughtful involvement that helps students develop thinking skills and attitudes that contribute to effective problem solving and critical thinking. The components developed into the main component of the literacy learning environment model based on social constructivist perspectives include modelling, engagement, dialogue, and the provide of a context. The components of this model are abbreviated as DECM literacy environment models. The design of this model aims to help develop early literacy skills of elementary school students in the early grade.

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