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Social Cognitive Approach through Interactive Multimedia for Early Reading Learning

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ABSTRACT

This study developed a learning model to improve students' early reading skills in Indonesia. The model is based on social cognitive learning theory and is implemented using interactive multimedia. The research method uses Design-Based Research (DBR) and the subjects are 195 first and second graders of an elementary school in Bandung, West Java. The findings of the study show that social cognitive learning can be integrated and implemented through interactive multimedia and that interactive-multimedia-assisted social cognitive model (IMAS Model) can improve early reading skills. Students' average early reading skill scores were measured using Early Grade Reading Assessment (EGRA) instrument before and after intervention to see the effectiveness of the model. Pre-test – post-test results comparison showed that students' average early reading scores increased after learning using IMAS Model. Students' average scores of reading letters, reading syllables, reading words, reading sentences, and reading comprehension skills at pre-test were 78.06, 67.06, 60.92, 55.21, and 44.95, respectively. These scores respectively increased to 92.71, 92.45, 88.58, 74.60, and 87.08 at post-test, indicating that IMAS Model is effective to increase early reading skills.]

Keywords: early reading, social cognitive learning, elementary school, interactive multimedia.

INTRODUCTION

Good literacy, especially early reading skill, will support students' academic performance in the future [1]. *Indeks Alibaca* (literacy activity reading index) developed by Indonesian government showed that, in general, the average score of literacy index of Indonesian people was low (37.32)[2]. Other studies also showed similar results, that early reading skills of students in Indonesia needs improvement. USAID PRIORITAS, for example, found that that less than half of lower grade students in Indonesia were able of fluent reading and reading comprehension [3]. Similar findings were shown in a study by OECD [4][5]. These studies indicated the needs for early reading learning model that could improve students' early reading skills.

Social cognitive approach have been found to be effective in improving students' learning results, including in early reading learning [6] [7] [8]. Social cognitive learning theory stated that learning is influenced by personal, behavioral, and environmental factors. Interaction of this factors in four steps; i.e. attention, retention, production, and motivation, resulted in learning. [9][10][11]. Another method that has been proven to improve early reading skills was interactive multimedia use [12][13]. Although there have some researches that combined social cognitive learning approach and interactive multimedia [14][15][16] with good results, there were very few that integrated social cognitive learning theory into an interactive multimedia designed specifically for early reading learning purposes.

The present study aims to develop a social-cognitive model integrated into an interactive multimedia to improve Indonesian students' early reading skills. The model was developed based on Bandura's social cognitive learning theory. Social cognitive learning theory puts great emphasis on students' cognitive process and emotion while learning and producing behaviors. The goals and results of social cognitive learning are students' ability to produce behaviors they observed in learning process. Social cognitive learning process occurs in four stages, i.e. attention,

retention, production, and motivation [17][9] [18][19][8][20].

In this research, Bandura's social cognitive learning is the theoretical background for formulating an early reading learning model. The four stages of social cognitive learning; i.e. attention, retention, production, and motivation, are integrated into each learning activity in the interactive-multimedia-assisted social cognitive learning model. At the same time, students' self-efficacy is developed and promoted through various learning activities that are formulated in such a way and presented with the help of interactive multimedia.

MATERIAL AND METHODS

Methods

The participants in this study were 195 first and second grade students and four teachers in a private elementary school in Bandung, Indonesia. Qualitative descriptive approach was implemented using design-based research method to develop the learning model. Design-based research was conducted in four steps: practical problem analysis, solution development, repeated process to test and refine the solution, and reflection [21][22].

Instrument

The instruments used in this study were *Aku Senang Membaca* application, an interactive multimedia developed specifically in this study for implementing social cognitive approach in early reading learning, and Early Grade Reading Assessment (EGRA) [23][24][25], an instrument to assess students' early reading skills. Data was collected through pre-test and post-test using EGRA instrument, in which students were given reading tasks consisted of reading letters, syllables, words, and sentences, as well as comprehension.

Procedures

Practical problem analysis was done through interview with teachers, pre-test to see students' early reading skills, and document studies. Then, an interactive-multimedia-aided social cognitive model was developed for early reading learning. The model was then implemented in natural classroom settings in two cycles. After each cycle, the model was revised based on the evaluation results. After the implementation, post-test was administered to the students to see the improvement of their early reading skills. The last step was reflection to gain insight about the model.

Data Analysis

Data was analyzed using qualitative descriptive method to compare the results of pre-test and post-test and interpret the interview data.

RESULTS AND DISCUSSION

Practical Problem Analysis

Interview with teachers indicated that early reading learning in the school was conducted using books as the primary resource. Teachers sometime also used videos and songs to teach early reading, but books were the predominant resource of learning. Based on the pre-test result, students had quite good average scores of early reading skills (Figure 1). Students' average scores for reading letters, syllables, words, sentences, and reading comprehension skills were 78.06, 67.08, 60.92, 55.21, and 44.95, respectively.

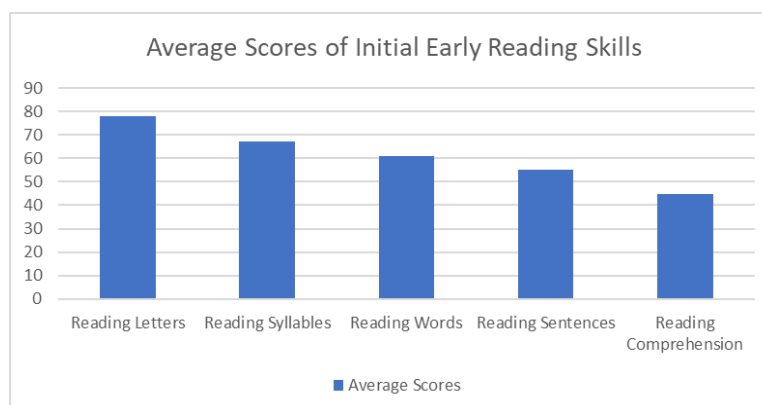


Figure 1. Students' Initial Average Early Reading Skills Scores

Several reading difficulties were noticed during the pre-test. Students with low scores generally had problems with recognizing and memorizing letters. In other words, they often confused several letters that looked similar.

This difficulty was carried over to the next stages of early reading. Those who confused their letters also had difficulty in combining the sounds into syllables. This, in turn, caused problems in reading words, in which students took longer time to read the words. In terms of reading sentences and reading comprehension, students received low scores because they could not read fluently enough to finish all the sentences, which caused them to fail in answering related comprehension questions.

Model Development

Practical problem analysis clearly indicated that early reading learning could be improved. This study proposed to do so by developing a model based on social cognitive learning which would be implemented through interactive multimedia. To improve students' early reading skills, interactive-multimedia-aided social cognitive model was developed.

Considering early reading problems identified in the pre-test, social cognitive learning determinants (personal, behavioral, and environmental factors) were formulated into seven social cognitive learning principles. The seven principles in IMAS model were Modelling, Attention, Retention, Production, Motivation, Self-Efficacy, and Self-Regulated Learning. These principles were integrated into an interactive multimedia developed specifically for early reading learning. The interactive multimedia was called *Aku Senang Membaca* and comprised of two main parts: material delivery and skill demonstration (practice).

Modelling principle meant that the content of the interactive multimedia should provide good and interesting examples of early reading for students to observe. This would help students memorizing the letters better, which would of course help in the next levels of early reading. Attention principle was formulated so that early reading lessons should be interesting enough to attract and maintain students' attention. Retention principle stressed that learning materials should be delivered in ways that would facilitate students to remember them. Production and Motivation principles were designed to provide students with opportunities to practice their learned skills (produce what they had observed and remembered) and to get feedback. Self-efficacy principle meant that every activity and lesson was developed to promote students' self-efficacy. The last principle meant that students should be able to self-regulate their learning.

Repeated Implementation

The model was implemented in two cycles, each with four steps focusing on reading letters, reading syllables, reading words, and reading sentences and reading comprehension. After each cycle, students' early reading skills were evaluated. The results showed that students' skills improved (**Table 1**).

Table 1. Results of evaluation after each cycle

Early Reading Skills	Average Scores	
	Cycle 1	Cycle 2
Reading Letters	82.86	88.36
Reading Syllables	79.93	90.79
Reading Words	78.53	85.64
Reading Sentences	63.68	70.74
Reading Comprehension	73.68	83.92

The improvement of students' skills showed that social cognitive learning implemented through interactive multimedia could help early reading learning. In post-test, students' average scores for reading letters, syllables, words, sentences, and reading comprehension skills were 97.21, 92.45, 88.58, 74.60, and 87.08, respectively. The comparison of students' average scores of early reading skill in each evaluation stage is shown in Figure 2.

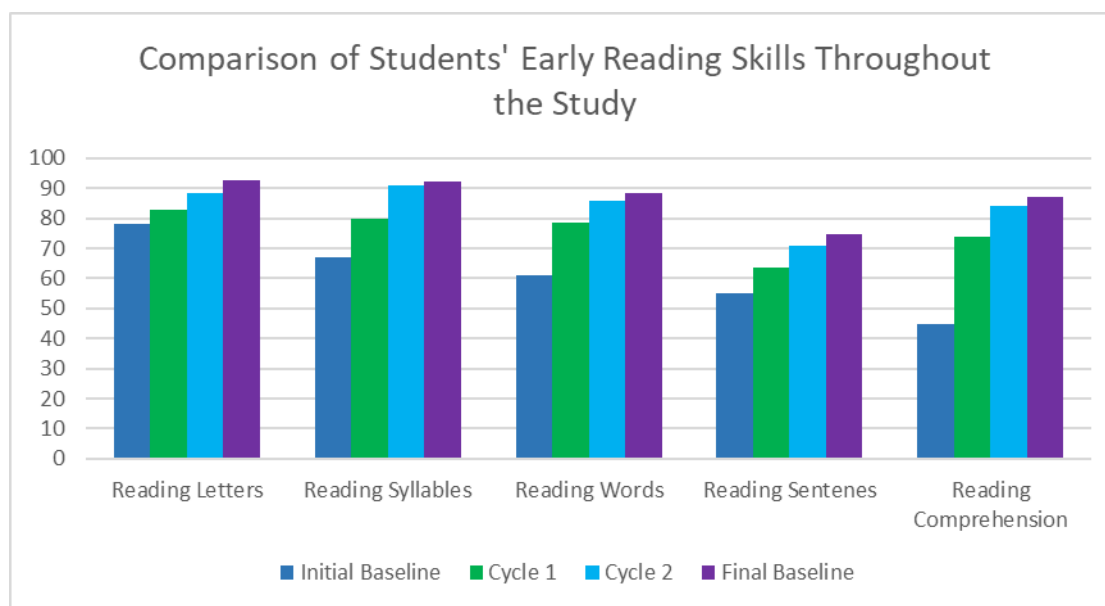


Figure 2. Comparison of Students' Early Reading Skills Throughout the Study

Figure 2 indicates that students' early reading skills improved from the pre-test throughout to the post-test. It indicates that implementing social cognitive learning through interactive multimedia for early reading learning could improve students' skills. Results of several studies [26][27][28][7][6] supports this finding.

Reflection

In addition to the improvement of students' average early reading scores, post-test also showed that students' experienced less difficulties in early reading. The model helped students to recognize and remember letters better. It also facilitated students to practice combining letters into syllables and syllables into words. Observing models and retaining the lesson through the model have helped students reading sentences more fluently, resulting in better comprehension.

DISCUSSION

The profile of early reading learning in elementary school showed that early reading was taught using books as the primary learning source. Practical problem analysis also showed that students' had difficulties in early reading. The difficulties identified in this study included problems in recognizing and remembering letters, confusing similar-looking letters, combining letters into syllables, combining syllables into words, and sentence reading fluency. These findings were in line with the result of several studies (such as [29][30][31]) which concluded that lower grade students had difficulties with letter identification, combining sounds to make words, and fluency in reading sentences. Observation during post-test indicated that implementing social cognitive using interactive multimedia for early reading learning could help students overcoming these difficulties. The efficacy of social cognitive approach and interactive multimedia in improving early reading skills shown in this study is consistent with the results of previous studies ([32][33][34][35][12][6][7]) which concluded that students' early reading skills could be improved using social cognitive learning and/or interactive multimedia.

CONCLUSION

Early reading learning could be delivered using social cognitive learning principles integrated in interactive multimedia. Interactive-multimedia-aided social cognitive model (IMAS Model) facilitated students to overcome difficulties in early reading learning and improved students' early reading skills, including reading letter, reading syllables, reading words, reading sentences, and reading comprehension skills.

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