



Scaffolding in Kindergarten Block Activities Based on Constructivism (Research and Development on Scaffolding Model for Block Activities in Kindergarten)

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Abstract

Playing block activity aimed at developing child's physical and motor skills in block building which come from cognitive skill which is used for thinking how to build desired building by placing some blocks horizontally and vertically. In playing block some other child's skills will also developed. To maximize cognitive development of the children, scaffolding is needed. This activity helping children to broaden view, stimulate, and motivate children to play blocks in their best. However, the scaffolding should be in the right content and ways. For this matter, a research and development is necessary. The research is preceded by an action reserach which is aimed at looking for teachers' best practices in giving scaffolding to children before, when, and after playing block. An outstanding kindergarten in South Tangerang, Banten Province, had been taken for the place of doing the classroom action research. As the result, the researchers together with the teachers had succesfully formulated the best way to give scaffolding to children that is by telling them a story about the building they are going to build and it is completed by giving them pictures or photos, or movies about the kind of building. However, too many angles of the building showing by the film, will make the children confuse and will reducing their quality of buildings. The last step was to tried-out this founding to another kindergarten in Bandung, West Java, and the teachers in that school were satisfied with the result..

How to cite

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INTRODUCTION

Playing block is one of kindergarten activities which are favorite for children. Block is considered as the most useful and preferred playing tools in kindergarten or other preschool institutions (Benish, 1978, Kinsmans G Berk, 1979 in Montolalu, et al, 2013). This activity aimed at developing child's physical and motor skills in block building which come from cognitive skill which is used for thinking how to build desired building by placing some blocks horizontally and vertically. In developing child's physical and motor skills, eye-hand coordination of the child also developed. Meanwhile, in developing cognitive skills, the child will have a skill in thinking about shapes and spaces and have imagination about building he/she can build with available blocks. Playing block invites joyful and happiness to children as they are free to move and thinking about what kind of building they will build. If children play block together, their socio-emotional skills will also developed through playing together that pursue solidarity among them. If they are playing while talking about what they are doing, then their language skills will also developed. Another skill that also developed during playing block is the ability to build blocks becomes a beautiful building.

There are so many benefits for children in playing blocks; hence almost all kindergartens use this activity as a favorite development skill for children. However, an effective playing block should have enough preparation by a teacher including what skills will be developed during the playing, how to achieve the skills, and what are the criteria that the skills have been accomplished. This planning should be written in a lesson plan completed by teaching scenario in which contains step by step teaching and learning. By writing this teaching scenario, the teacher will be able to tell the children their learning goal and aims. Furthermore, the teacher will also be able to explain what learning steps should they do to achieve the aims and what are the indicators that the aims have been accomplished. Meanwhile, the teacher can predict what kind of handicaps the children will find in achieving the learning goals and how to give assistances to them.

The effort of teachers to make a lesson plan, essentially is to help children experience learning process successfully. This effort is called scaffolding (Jame MacKenzie, 2000 in Heather Coffey, 2014). Scaffolding can be conducted by teachers in anykind of activities in order to help children solve their problems in learning. Especially

in playing block, teachers can do many ways to make physic-motoric and cognitive of children optimally developed. For example, by giving scaffolding verbally like telling a story about buildings, giving some examples of buildings through some pictures, demonstrating how to build a building, and so on. Scaffolding like this is based on belief in Piaget theory about how children construct knowledge and it is known as constructivism theory which believe that knowledge is not just a copy of something from circumstances but it is more construct thinking actively by making connection between one object with another (Piaget in Foreman and Kachner, 1993).

To uncover what kind of scaffolding can be effectively created by a teacher in block activities, a research is needed which aims at developing scaffolding model for block activities.

Block Building Activities

Block building activities have a goal to lead self control and self arrangement, planning and coordination some rules for pre-school children and providing facilities that can show symbolic thinking and concrete manipulation (Y.N. Sujiono, et al, 2013). By playing block children blend a plan that is through describe the plan what they are going to build. Then they discuss how to build a building by blending their plan and finally execute the result of the discussion about the building. In addition, playing block encourages children to learn together in a structure. By playing together children learn how to manage their mates, themselves, and discuss their ideas. The ability to think symbolically in playing block can be seen when they discuss a plan and "blue print" what they are going to do. Meanwhile, the ability to arrange a pattern can be seen from the way they structure some different block shapes to be come a structured pattern. (Y.N. Sujiono, dkk, 2013)

Development Aspects in Playing Block

Some child's development aspects can be developed by playing block, like physic-motoric, cognitive, social and emotion.

Scaffolding

The term 'scaffolding' comes from the works of Wood, Bruner and Ross (1976). The term 'scaffolding' was developed as a metaphor to describe the type of assistance offered by a teacher or peer to support learning. The teacher only attempts to help the student with tasks that are just beyond his current capability. Student errors are expected, but, with teacher feedback and

prompting, the student is able to achieve the task or goal. When the student takes responsibility for or masters the task, the teacher begins the process of “fading”, or the gradual removal of the scaffolding, which allows the student to work independently (Mary Firestone, <http://education-portal.com/academy/lesson/scaffolding-in-education-definition-theory-examples.html>).

“Scaffolding is actually a bridge used to build upon what students already know to arrive at something they do not know. If scaffolding is properly administered, it will act as an enabler, not as a disabler” (Benson, 1997).

In the field of education, the term **scaffolding** refers to a process in which teachers model or demonstrate the problem-solving process, and then step back and offer support as needed. Psychologist and instructional designer Jerome Bruner first used the term ‘scaffolding’ back in the 1960s. (Mary Firestone, <http://education-portal.com/academy/lesson/scaffolding-in-education-definition-theory-examples.html>). Besides, scaffolding refers to some instructional techniques for moving children progressively to a better strong comprehension and independence in learning. In addition, scaffolding often be used to bridge learning discrepancies, for example the discrepancy between what the children have learned and what should they learn and what they have to be able to do in the limit of their study time. For instance, if the children are not in the reading level of being able to comprehend vocabularies, the teacher may use scaffolding to improve their reading level until they can achieve what is hoped they can do without assistances from others. Hence, we can say that scaffolding can reduce negative emotion the students can have when they begin to confuse, frustrated, intimidated, or when their spirit in the decline because they attempted to do a difficult task without any helps, guides, or understanding they need (The Glossary of Education Reform, 2014).

Common Process of Scaffolding

Firstly, a teacher begins teaching at the level at which students understand, and then she builds on that understanding. She then presents the problem and thinks aloud as she goes about solving it. In the process, she shows how it’s done by combining actions, images and language. She then does the following:

She repeats this process two more times, asking questions of the students along the way.

Each answer, right or wrong, receives a positive response from her, to encourage participation.

More students are asked to respond to the questions each time it is repeated.

Correction is provided as needed but reinforced positively.

When understanding appears to be achieved, students join her in solving a new problem.

Understanding is checked as they solve it. If more instruction is needed, more modeling is provided.

If students then demonstrate knowledge, she **fades** (steps away) and allows students to work independently, offering support as needed. (Mary Firestone, <http://education-portal.com/academy/lesson/scaffolding-in-education-definition-theory-examples.html>)

Constructivism Theory

Constructivism theory also has a comprehension about learning that emphasize the process of learning rather than the result. Learning achievement as a goal of learning is importance, but the process that involves learning method and strategy is also importance.

In the process of learning, learning achievement, method and strategy influence thinking structure and scheme of someone.

As an attempt to have knowledge, children “construct” or build their own knowledge about phenomena they found with their experiences, cognitive structure, and self efficacy (Dahar,1989). Therefore, learning according to Constructivism is not just remembering but more to construct knowledge through experiences. Knowledge is not a “gift” from someone else likes teacher, but the result of a construction process from individual. Knowledge that comes from a “gift” will not be meaningful. However, knowledge that come from construction process will have a deepen place in memory and will be remembered longer.

METHOD

This research employed Research and Development with following steps: (Figure 1. Steps of Research and Development)

Research and Development is a process or steps to develop a product or to make a product more perfect. In the process, the research uses the following method:

1. Descriptive (collecting data about the existing condition))
2. Evaluative (evaluating the experiment process of product development)
3. Experiment (testing the effectiveness of the final product)

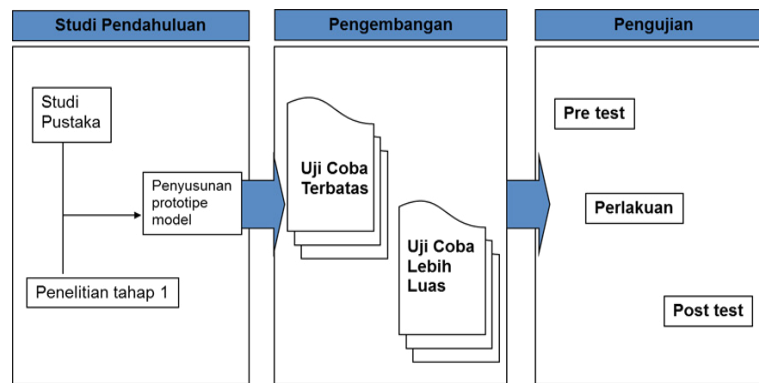


Figure 1. Steps of Research and Development

In detail, the steps are as follow:

1. Collecting information

The measurement of needs, that is to identify some kinds of scaffolding used by the teacher more often in playing block activities.

Literature Study, collecting and studying literatures about scaffolding and constructivism

2. Prototype development, developing a more specific prototype of scaffolding model for encouraging block activities.

3. Scaffolding model development, developing scaffolding model for block activities:

Identifying learning difficulties in building block,

Developing scaffolding for playing block activities on the basis of constructivism theory.

Identifying kindergarten will be used for experimenting the prototype of scaffolding model.

Training the teachers how to use the scaffolding model prototype.

Conducting limited experiment for applying the scaffolding model prototype in identified kindergarten.

Analysing the result of the limited scaffolding model prototype experiment.

Revising the scaffolding model prototype.

Identifying kindergartens will be used for broader experiment of scaffolding model,

Conducting experiment about the revised scaffolding model in 1 to 3 kindergartens.

4. Assessment:

a. Field experiment at a kindergarten in Bandung

b. Observation, interview, questionnaire.

Population and Sample

Population is the kindergarten teachers and students in Bandung. The reason to choose Bandung as the target research is that because Bandung has some high quality kindergartens

and they are willing to be the research subjects. Samples are 30 % of the teachers and 30 % of principles. Samples were chosen randomly. For this limited experiment, the samples are some teachers and students (from one class) in a chosen kindergarten based on the result of the identification. The criteria for choosing the kindergarten are those which have tools and materials appropriate for the developing model, teachers who are able and willing to be samples in this experiment, and permission from the parents of the students. For the broader experiment, the samples will be some teachers and students from three classes in three kindergartens which are chosen based on the criteria.

Time of the Research

This research was conducted since April until Nopember 2015. Survey was chosen as the technique to collect data by using close and open questionnaire. Beside, interview to the teachers was also used to deepen understanding about the collected data. To make the data more valid, documentation study was also conducted by looking at the teachers' teaching preparation. The data from questionnaire were analyzed quantitatively then were described naratively by collaborating with the data from interview and documentation study.

RESULTS AND DISCUSSION

For the first data collection that is in order to create scaffolding model appropriate for children in block activities, the activity to collect data followed the steps: The data about how the teachers conducted block activities was collected by questionnaire which were delivered to 20 teachers from some kindergartens who are studying in the same Study Group of PAUD-UT (Early Childhood Education of the Indonesian Open

University) students in Serpong area. From the returned questionnaire, some names were taken and were phoned for interview. This activities are for deepen understanding about their answers in the questionnaire. To confirm their answers with what they did in their class their teaching plans were analyzed.

The data from interview

In interview with a teacher, the researcher asked why the teacher tell a story about building and its' circumstances. The teacher answered that she meant to bring the children to imagine a building and its' parts. Moreover, when was asked why the teachers didn't use visual media like, picture, film, and so on. She answered that she has no idea about that. Actually she know that children's thinking is still concrete, but she hasn't realised the value of the visual media to children's learning.

Moreover, the researcher posed a question how if there is a child who are confuse and have no idea at all and he/she just sit down looking at his/her friends, what will the teacher do ? The teacher said that she will give an example directly how to build a building by piling up some blocks. Furthermore, the child will be asked to continue build the building until the end of the time.

Documentation Data

In a daily lesson plan made by the interviewed teacher, the researcher found block activities written in the main activities column but the teacher didn't write the theme of the block activities. Therefore, we can assume that the theme of block activities followed the theme of the daily lesson plan.

From the data we can see the general pattern of block activities that is usually done by teachers including giving scaffolding. Based on the general pattern, the teachers asked their students to play block. The researcher and the teachers discussed and tried to find the best scaffolding model for playing block. The discussion successfully borned the first generation of scaffolding model, as follows:

First Design Of Scaffolding Model For Playing Block

I. Preparation

- a. Preparing location for playing block
- b. Preparing blocks will be used
- c. Determine theme for playing block
- d. Choosing stories, pictures, and audio-visual for scaffolding
- e. Preparing children's readiness to play block.

II. Pelaksanaan

- a. Telling the children the theme of playing block
- b. Deviding children in some groups
- c. Delivering blocks to every group
- d. Giving scaffolding by telling a story or showing pictures or showing a film about buildings and its' circumstances.
- e. Asking students to arrange block in their own group based on the theme
- f. Giving guidances to the children who have difficulties or do not have a good imagination in playing block
- g. Giving motivation to children to work in their best.

III. Closing

- a. Evaluating child development in playing blocks
- b. Asking the children what they like and don't like in playing block
- c. Asking the children to tidy up the blocks (put the blocks back to its' place)

1. The prototype of the first generation was used by two research assistant teachers in classroom action research in order to make the teachers feel the advantages and disadvantages of the scaffolding model. In the classroom action research the teachers also performed the way they usually use scaffolding to see the differences between both ways in effectivity. The classroom action research was observed by the researcher and the results were discussed with the two teachers to improve the scaffolding model prototype. The classroom action research was conducted in three cycles as follow :

Cycle I:

- | | |
|------------------------------|--|
| Name of Kindergarten | : TK Ananda |
| Group | : B |
| Amount of student | : 15 children |
| (from middle to upper class) | |
| Amount of teacher | : 1 person (has education background S1) |

Learning Activities:

Firstly, the teacher prepared a playing block area by placing some carpets in her class. Then she asked the children to sit down in a half circle around her.

The teacher explained that now they will play blocks with My School as the theme, so the children will make a school building. After that, by showing some school building pictures, the teacher told some details of a school building like the shape, its' parts, the function of each part, and so on. Then, the teacher asked the children to make some groups and began to take blocks from its' rack. In short time, the children start

to play blocks. Firstly, the children chose some blocks and began to arrange the blocks. Although they did some trial and error, but the building was ready quickly. They also worked together very well in their own group. In this activity there was no child who has difficulties or looked confuse. From the final result of the building they made, the teacher assumed that the creativity of the children improved. The shapes of the building became more complex and have higher art value.

Reflection:

Telling a story as scaffolding completed by school building pictures, actually can improve child's imagination so their creativity arise. The building they made was more complex with higher art value. They made a building quickly like they have pattern of the building in their mind.



Figure 1. Telling story as scaffolding

Improvement Plan:

To improve the quality of the results of playing block activity, the researcher and the teacher had a plan to replace the pictures with 3D film that shows many kinds of school buildings but the scenes in the film are not in continuity (more like a slide program).

Cycle II:

Name of Kindergarten	: TK Ananda
Group	: B
Amount of student	: 15 children
(from middle to upper class)	
Amount of teacher	: 1 person (has educational background S1)

Learning Activities:

After preparing playing block area, the teacher asked the children to sit in a half cycle around her. Then, she gave scaffolding by telling the theme of playing block for today that was school building. After that, by using a computer she played a film about school building, but this time the scenes are in continuity like a cinema. She asked children to pay attention to the film.

After watching the film, she asked the children to begin to play blocks in groups. The children began to choose blocks for their own group. Their ideas seem like water flow as it happens in the first cycle. The children seem like didn't need time to think in arranging the blocks to be a building, like putting blocks in parallel, placing one block over another, and so on. In a group, communication among them was very rare. However, every child had contribution to the building they made. After all, children finished with their work, the teacher looked at and asked a question as well as gave a comment on what the children had done. To the researcher the teacher said that the building the children made today was as good as the building they made in the first activity.

Reflection:

Telling a story as a scaffolding completed by a film about school building, in fact can improve children's imagination as well as their creativity. The building as the result of this activity as good as the building they build in first cycle when the children were given a story completed by still pictures as a scaffolding. In the second cycle, maybe when the children watch the 3 D film where they can see some building from many directions, they confused and didn't know the real shapes of the building.

Experiment Planning:

The second scaffolding model prototype finally was formulated, that was by telling a story, making conversation, doing ask and answer questions, and watching film on the basis of the theme. After that, to see the effectiveness of their prototype, a limited experiment need to be conducted. If this limited experiment was successful, then a broader experiment can be conducted.

The result of this experiment was formulated as the second scaffolding generation.

The second scaffolding model (revised model) was experimented in another kindergarten. This experiment was to make sure the effectivity of the model if it was used by other kindergarten teachers. If disadvantages still remain, then the model will be revised. The chosen kindergarten was TK Pembina, Jl Sadang Serang, Bandung. This kindergarten was a discussion leader in its group which exist in one area in Bandung. In this kindergarten, group B was chosen with 10 children studying in this group. The procedure of scaffolding in that experiment was as follow:

The teacher tells the theme of playing block for today

The teacher begins question and answer activity with children about the theme in order to dig the children's knowledge and experience.

The teacher tells a story about the theme (for exam: in theme My School the teacher tells the shape of the school building, parts of the building, interior of the building, facilities that usually exist in that building, and so on). This activity aims at stimulating children's memories about school building they ever seen before.

The teacher shows pictures of some school building. This activity aims to awaken the child's imagination about the various forms of school buildings in order to develop their imagination freely,

If it is possible the teacher plays a video about the real school buildings. This activity aims at strengthen and broaden children's imagination and motivate them to build buildings like what they have ever seen.

The teacher explains how to build a building correctly (not easy to fall). That is by placing correct shape and size of the blocks (the smaller block is placed over the bigger one).

The teacher asked the children begin to play blocks by building school building based on their imagination. If the children are asked to work in a group, their social-emotional will also developed,

During playing blocks, if there is a child who have difficulties, the teacher doesn't give example directly by demonstrating how to build, but just shows the child some pictures and motivates the child to make her/his own building inspired by the pictures.

If the children have finished with their works, then the teacher asks them what building they have made and what parts of the building include. Finally, the teacher gives positive comment about their works and give some suggestion to make the building better.

The teacher makes note about children's development in playing blocks by writing descriptively their creativities and their abilities in making buildings.

The teacher does a closing by asking the children what part of the playing blocks activity they like more and what building they want to make if they play blocks in another time.

CONCLUSION

From this research and development, we can conclude some important things as follow:

1. Scaffolding is needed in kindergarten ac-

tivities in kindergarten including playing blocks. Scaffolding is needed to help children learn or think before and during completing their work in an activity.

2. On the basis of Piaget theory about constructivism, in playing blocks scaffolding aims at giving children broader pictures about various shapes and parts from some buildings. Therefore, the children will have broader imagination and ideas to make a building as they like,

3. The most effective technique in giving scaffolding at block activities:

Telling the children a story about buildings they are going to make on the basis of the theme, including various shapes and parts of the buildings; Showing the children pictures/films about buildings, but avoid showing them a film in which a building can be seen from many directions because it will make the children confuse; Asking and answering with the children about the buildings; Asking children work in groups; Helping children who have difficulties by stimulating their imagination; Evaluating the children's work and telling them their advantages and disadvantages in playing blocks.

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