

Development of Project-Based Teaching Modules to Improve Fine Motor Skills of Early Childhood

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ABSTRACT

Educators have difficulty finding learning device guides that are easy to apply and can be modified. In fact, the ability of educators to organize learning activities and learning devices that suit children's needs is very important, in order to support the optimization of every aspect of development in early childhood. This study aims to develop a project-based teaching module to improve fine motor skills in early childhood. The research method is *Research & Development* with the ADDIE model (*Analysis, Design, Development, Implementation, Evaluation*). Validation was carried out by three expert lecturers and two teachers as justification when field validation was carried out. Data collection techniques used interviews, questionnaires, and observations. Data analysis the need for a preliminary study of teacher interview data was analyzed descriptively narratively, and validated with the results of observations of classroom learning activities and the results of the questionnaire of parents using the Likert method on a scale of 1-4. Qualitative data in the form of input, criticism, and suggestions put forward by media experts, material experts, and teachers to improve the product. Quantitative data was obtained from the answers to the questionnaire which were then converted into qualitative data by giving a score using a Likert scale to assess the feasibility of the teaching module according to the assessment criteria. The results of the feasibility test of the teaching module from material experts showed a value of 4.48 with good criteria, from the results of the teacher and parent questionnaires for the effectiveness of the value of 90.16 with very good criteria. Based on the results of this study, it has produced a project-based teaching module that is effective in developing the fine motor aspects of early childhood.

Keywords: *Students' Perception, Online Learning, Covid-19 Pandemic*

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INTRODUCTION

Learning tools are one of the tools used as a guide by an educator to organize his class, so that all aspects of student development are optimized (Purnamasari et al., 2024) . However, in the field, there are still many educators who consider this guide in the form of learning tools to be not that important. The use of teaching modules has many benefits. Educators can apply an approach that is in accordance with the correct steps so that it is

more meaningful (Triana et al., 2023) . And also the use of this teaching module can improve students' abilities as intended (Mayassari et al., 2023) . Even for further studies at the early childhood level, the development of digital E-Modules has been carried out which can support the improvement of aspects in an integrated manner (Ghazali & Ashari, 2024) .

The characteristics of early childhood are having multiple intelligences. In this theory, Gardner states that there is no stupid or smart child in every child , but rather a child who stands out in one of his intelligences. These intelligences are linguistic, logical mathematical, physical, visual spatial, intrapersonal, interpersonal, musical, naturalist, and existential intelligence. With six basic abilities of early childhood, namely moral and religious values, social emotional, cognitive, physical motor skills, language and arts, then integrated learning is actually relevant learning to facilitate learning activities for early childhood (Sumantri et al., 2021) . Every aspect of development in children must be optimized as well as possible, one of which is fine motor skills. Neurophysiological research reveals that the brain regions responsible for cognitive and motor functions are closely related from a very young age. Fine motor skills are genetically and phenotypically related to later neurodevelopment, psychopathology, and educational outcomes. Future research should investigate the mechanisms underlying the role of fine motor development on later outcomes (Bowler et al., 2024) .

One study conducted by Basmah Hulwah showed that among several causes of children experiencing difficulties when it comes to eye-hand coordination abilities are weak or lack of stimulation of fine motor skills, as well as weak visual memory (Hulwah & Ahmad, 2022) . Children will also be hampered in their ability to be independent in completing their daily activities if their eye-hand coordination abilities are not stimulated from an early age (Jessica & Adhe, 2020) . Likewise, support from the surrounding environment for children to be able to express themselves with various activities provided by teachers greatly affects children's fine motor skills (Siahaan, nd) . Of course, the development of this fine motor skill must also be supported by activities at home that can be done by parents for more optimal results (Aguss et al., 2021) . and it is recommended to stimulate using a variety of other educational play tools (Asyipa & Hidayat, 2024) .

One of the most important basic concepts of early childhood development is the development of learning models chosen by educators. Strategies, approaches, methods and techniques, and tactics chosen by educators are efforts to facilitate all growth and development of early childhood as a whole, so that early childhood gets the right variety of stimulation to grow and develop. In one of the studies conducted by Damayanti (2023) through literature study research on the major role of an educator in order to foster children's interest in learning in students whose initial interest was very low (Damayanti, 2023) . And the development that must be developed optimally, educators must of course have references (Sanenek et al., 2023) . The right strategy chosen by the teacher can also improve children's character values both directly and indirectly (et al., 2021) , even activities that are complicated for most people can also be understood by children if the stimulation is right (Isbah et al., 2022) .

Project-based learning is not new, but there are still many teachers who have not implemented this model in development activities in their classes. This project-based learning adopts the theory of constructivism and cognitivism. In one of the findings in the research conducted by Saad and Zainudin, in the success of implementing development activities, the constructivist and collaborative approaches in development activities are a concern for educators. Based on this project-based learning research, there is increasing the ability of early childhood to think symbolically (Motimona & Maryatun, 2023) .

The results of the study show many positive things from the implementation of the project-based learning model. Among them are being able to improve children's cognitive skills (Guswanti, 2024) , improving children's ability to solve problems (Husain et al., 2024) , improving problem solving (Lestari, 2020) , improving social skills in children (Sa'diyah et al., 2023) , improving symbolic thinking skills in early childhood (Salmawati & Maryatun, 2024) , and also creative thinking skills (Saparahuingsih et al., 2022) . And this project-based learning is very supportive for the implementation of the Merdeka Curriculum (Pratami et al., 2024) . And also able to support the realization of teaching skills for 21st century educators (Martinez, 2022) .

Based on the results of the observation assessment conducted by the teacher related to fine motor skills, namely eye and hand coordination. Children have difficulty eating with a spoon, buttoning clothes, zipping pants, zipping bags, sharpening colored pencils, sticking, and cutting with simple patterns. These difficulties were seen when the researcher conducted observations; There are 53% of students with abilities that are starting to develop and 13% of students who have not developed, and only 26% of students with the criteria of developing according to expectations, and 8% of students with the criteria of developing very well.

The teaching method used by educators is more often in the form of children's worksheets (LKA), and teachers only make learning devices in the form of very simple teaching modules, with activity components that only focus on opening, core, and closing activities. It can be seen that students who participate in learning activities tend to be passive, focus their attention on activities for only 5-6 minutes, and some children look busy with their respective activities such as measuring each other's pencils, whose pencil box is bigger, chatting about the night market, and there are students who sit with their heads bowed on their neatly folded hands. Based on the results of observation data, the main need of children is fine motor development. However, in the implementation of the learning model in Cempaka Putih Kindergarten, teachers feel that project-based activities are difficult to implement because they have not been able to compile project steps properly and feel that this model is more suitable for higher elementary schools. The research that produced the *botanica-project module product* by Sarah Jessica and Kartika Rinakit Adhe, which has been implemented by 30 kindergarten teachers with a percentage value of 87%, so it is included in the very good category. The eligibility of the module assessed by the material expert obtained a value of 89% with very good criteria . And for the value from the media expert, a value of 85% was obtained with the criteria are very good (Jessica & Adhe, 2020) .

From the results of non-formal interviews conducted by researchers with teachers, researchers identified the needs of teachers to be able to implement this project-based learning model. They need reference products in the form of teaching modules as a guide in development activities in their classes. Thus, aspects of fine motor development in children can develop optimally through fun and meaningful activities

METHOD

The approach used in this study is a mix method approach (qualitative and quantitative data) to test the feasibility of the effectiveness of the teaching module. The methodology used in this study is the research and development (R&D) ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The development process is carried out through needs analysis activities, then designing teaching modules, developing materials, implementing them in limited classes for field validation, then based on expert testing and field validation, the final module is compiled.

The place of the research was conducted at Cempaka Putih Kindergarten. The subjects of the research were students at Cempaka Putih Kindergarten, Penarik Village, Penarik District, Mukomuko Regency, Bengkulu Province.

Data collection was done through observation sheets, interviews and questionnaires. In this study there are two types of data, namely qualitative and quantitative data. For the needs analysis data for the preliminary study, the data from teacher interviews were analyzed descriptively narratively, and validated with the results of observations of classroom learning activities and the results of the parent questionnaire using the Likert method on a scale of 1-4.

For suggestions, criticisms and input from media experts, material experts, and teachers so that the product can be improved as qualitative data. For the analysis of the questionnaire that has been converted into a Likert scale score is quantitative data used to assess the feasibility of the teaching module according to the assessment criteria (Dr. Hj. Abdul Fattah Nasution, M., 2023) .

FINDING AND DISCUSSION

1. Analysis

a. Analysis of student needs

Based on the results of observations by educators using the indicator format as in table III.4, the data obtained from 16 students contained 2 students with undeveloped criteria abilities with the condition that students must be guided and must be given examples and reminded to complete assignments, and for the criteria starting to develop or are on a scale of 1, 8 students with developing criteria abilities or are on a scale of 2, for four students with criteria of developing according to expectations and two students with criteria of developing very well.

The following is a description of student development before the implementation of the teaching module.

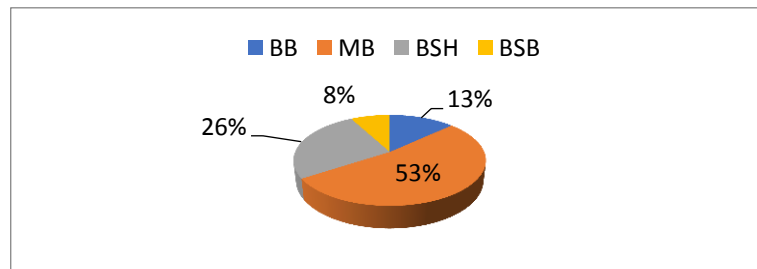


Figure 1: Percentage of children's fine motor skills

b. Teacher Needs Analysis

From the results of interviews with two class teachers at Cempaka Putih Kindergarten, Penarik Village, namely Mrs. Desmawati and Putri Suryani. And two assistant teachers, Mrs. Lindawati and Yanti, the following is a description by the researcher:

1) Experience in Implementing Project Learning:

Some of the researcher's findings, the first educators have implemented project-based activities but without teaching modules, the findings are proven by documentation of activities but without teaching module documents. The supporting factors in the activities are the participation of parents to actively participate in learning activities at home so that there is synchronization between learning activities at home and at school. Students who are enthusiastic and have high interests so that the activities run pleasantly. The obstacles faced are project activities that are not sequential so that they require class teachers who become facilitators to dictate all activities, pegged to one educator. It was monitored from the results of the researcher's observations that there were findings that educators as accompanying teachers were confused without the direction of the class teacher. And the activities are not in accordance with the syntax of project-based learning based on theory.

2) Experience in Implementing Project Learning:

The results of the researcher's interview with the educator, it was found that the educator only planned activities with discussions before the activity and only wrote down 3 core activities of the project being carried out, such as a cooking class project making healthy vegetable fritters, with the sequence of activities observing a reference video of the process of making vegetable fritters, then the project activities were carried out directly in each group. The follow-up activity was for students to carry out project activities at home with their mothers. The educator has never compiled a complete teaching module, because he does not understand how to organize, narrate and describe the material in the teaching module. The most important thing for educators is how learning activities are fun.

The stimulation that has been done by educators is the activity of working on children's worksheets by drawing dotted lines on letters, imitating writing with finger paint. From the findings that researchers obtained, in project activities students have not been stimulated to cut, stick and cut. More educators help.

3) Facilitating Student Learning and Guidance:

For this activity, educators carry out mentoring activities when children have difficulties, they will be assisted and given encouragement in the form of motivational encouragement to return to the activity and definitely be able to do it. In the findings, researchers saw from the observation activities that educators were too quick to conclude that children needed help, without first asking whether the child needed help, so they did not give children time to try to complete their activities or express what they needed.

4) Evaluation and Monitoring of the Learning Process:

With documentation of the results of the work, and for the process activities have not made an assessment tool. From the findings of the researcher, educators have not made an assessment instrument. And there are no documents that can be shown, only documentation of activities is shown. And short narrative notes from several students.

5) Challenges and Successes:

The challenge is to create teaching modules and assessment tools, because educators do not yet understand the theory or steps of project activities that are in accordance with actual project learning. For the success of each child, they can participate in activities and complete their activities.

The findings of the researchers show that educators have not set aside special time to create or learn to compile teaching modules because their time is not well organized.

6) Recommendations and Suggestions:

Educators need special time to create and organize learning wars, educators need teaching modules that can be used as references.

2. Design

From the results of the analysis, the researcher prepared an initial draft design of the teaching module in the form of a draft first.

In the draft model 1, the researcher compiled a teaching module that had undergone a process of analyzing the needs of students and analyzing the needs of teachers previously. In the next step, the researcher created an initial design for the teaching module with several sequences of activities as follows:

a. Determining learning objectives based on observation results, namely activities to develop fine motor aspects.

b. Compile learning indicators from learning achievements as follows:

1) Literacy Elements (Language)

a) Children are able to express expressive language in the form of asking questions.

b) Children are able to answer and carry out commands from simple questions/sentences.

c) Children are able to retell stories based on observations they see or hear.

2) Basic Elements of Science (Cognitive)

a) Children demonstrate critical thinking skills by asking relevant questions about video observations, the results of visits to sewing houses and accessory shops.

b) Children demonstrate the ability to come up with ideas for selected projects in completing projects in groups

3) Identity Elements (Fine Motor)

a) Children are able to use eye and hand coordination functions to design the project they are going to make

4) Elements of Religious and Moral Values

a) Children show their emotions in a natural, non-excessive way and build healthy social relationships.

Select learning activities that are adjusted to the learning objective indicators in table 1 .

Table 1: Learning indicators

No	Learning Indicators
	Literacy Elements (Language)
1	Children are able to express expressive language in the form of asking questions.
2	Children are able to answer and carry out commands from simple questions/sentences.
3	Children are able to retell stories based on observations they see or hear.
	Basic Elements of Science (Cognitive)
1	Children demonstrate critical thinking skills by asking relevant questions about video observations, the results of visits to sewing houses and accessory shops.
2	Children demonstrate the ability to come up with ideas for selected projects in completing projects in groups
	Identity Elements (Fine Motor)
1	Children are able to use eye and hand coordination functions to design the project they are going to make
	Elements of Religious and Moral Values
1	Children show their emotions in a natural, non-excessive way and build healthy social relationships.

Learning Activities

1. Watch a video about zippers made by teachers/ from YouTube
2. Listen to a picture story about the benefits of using zippers.
3. Visit the nearest tailor shop to interview the tailor.
4. Choose scrap fabric that is no longer useful in the sewing house
5. Assembling the letters “zipper”
6. Match the zipper color with the patchwork color
7. Match the zippers according to color
8. Installing a variety of zippers on pencil cases from used bottles or scraps of cloth.
9. Installing zippers on various geometric shaped bags from patchwork/flannel.
10. Installing zippers on patchwork or flannel shirts and skirts/pants
11. Creative presentation of the results of the magic zipper project
 - d. Create a design for the assessment tool used in the teaching module in the form of a checklist.

e. Creating teaching media that will be used, one of which is media in the form of a video about zippers.

f. Prepare all the tools used in the activity.

g. Make a schedule of activities.

The schedule is carried out using a blocking technique for 6 days of activities.

h. Create a guide for educators in using teaching modules

In the first draft, the researcher has not made instructions for using the teaching module and the benefits of the teaching module. So there are improvements to the suggestions from the validator.

1) From Dr. Lilis Suryani, Md: the teaching module is provided with a foreword, as well as instructions for using the teaching module.

2) From Mr. Dr. Sukiman, M.Pd: there are several typos in the teaching module.

3) From Dr. Nita Priyanti, M.Pd: the concept material must be adjusted to the development stages of the foundation phase.

3. Development

At this development stage, the initial draft is tested by material experts and media experts.

4. Implementation

At the implementation stage, namely for field validation by two expert justifications, namely educators at Cempaka Putih Kindergarten.

The following is a picture before and after the implementation of project-based teaching modules to develop children's fine motor skills.

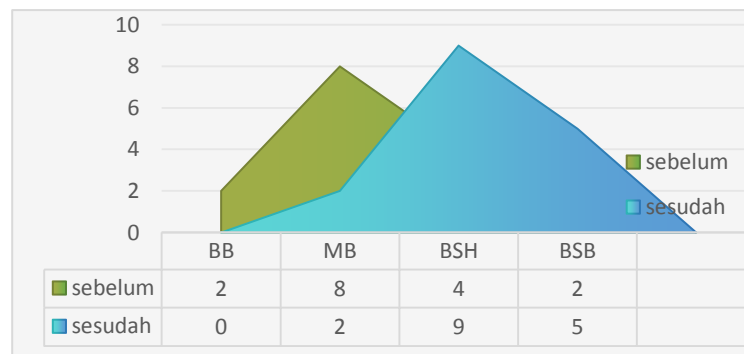


Figure 2: Before And After The Implementation Of Project-Based Teaching Modules

After the implementation activities were carried out, the researcher prepared the final module in accordance with the criticism, input and suggestions from the material expert examiners, as well as media experts and expert justification.

In the final module, the teaching module is complete and adjusted based on suggestions and input from the validator.

The details are as follows:

1. Module cover and foreword



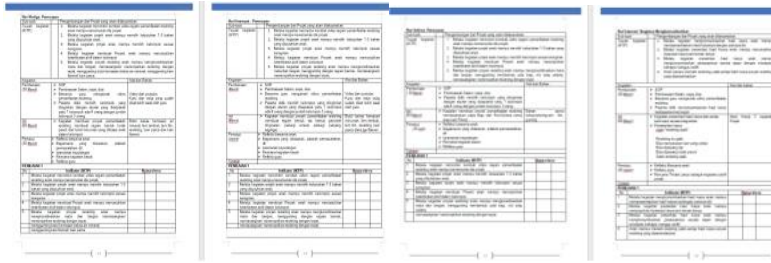
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3. Instructions for using the module and Benefits of the module



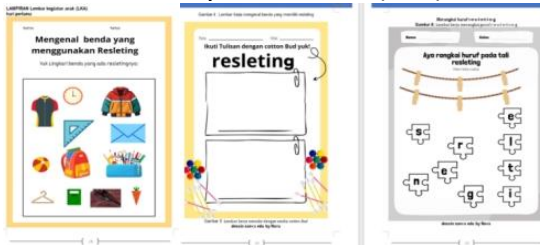
4. Magic zipper project-based teaching module



5. Closing



6. Children's Activity Worksheet (LKA)



7. Project overview and bibliography



CONCLUSION

Based on the results of data analysis in CHAPTER IV and the discussion, there are several conclusions that the researcher describes as follows:

The purpose of this study was to develop a project-based teaching module that can improve fine motor skills in early childhood using the R&D ADDIE model (Analysis, Design, Development, Implementation, Evaluation). Based on the results of the study, the teaching module that has been designed shows effectiveness in achieving these goals. This module received a positive response from educators at Cempaka Putih Kindergarten, which shows that this module has succeeded in improving children's fine motor skills through a project-based approach.

The development of this teaching module is expected to be followed up and disseminated to other educational institutions throughout Indonesia. The implementation of this module must be adjusted to the specific situations, conditions, and needs of students in various educational institutions. With the right adaptation, this module has

the potential to make a significant contribution to improving the fine motor skills of early childhood in various educational contexts.

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