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Development of Collage Module Based on Natural Materials in Quantum Learning to Strengthen the Character of Independence in Early Children

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Abstract: This article aims to determine the results of the development of modules to strengthen the independence character of early childhood. The research subjects are early childhood children, namely in KB Pertiwi Bersinar Langenharjo Margorejo Pati and KB Abu Bakar Ash Shidiq Margorejo Pati. By taking a sample of 6 early childhood students. This article uses Research and Development (R&D) development research. This research model uses the development of Borg and Gall. Data collection techniques 1) Observation, 2) Interview, 3) Questionnaire. The research instrument uses 2 types of data, namely qualitative and quantitative data. The validity of the data was tested by determining the characteristics of the needs according to the perceptions of teachers and students. Data analysis used the score test (N-gain). Presentation of product trial data through expert assessment. Test the effectiveness of the product using a one-group pretest-posttest design. This article aims to determine the results of the development of modules to strengthen the independence character of early childhood. The research subjects are Early Childhood Education, namely in KB Pertiwi Bersinar Langenharjo Margorejo Pati and KB Abu Bakar Ash Shidiq Margorejo Pati. By taking a sample of 6 early childhood students. This article uses Research and Development (R&D) development research. This research model uses the development of Borg and Gall. Data collection techniques 1) Observation, 2) Interview, 3) Questionnaire. The research instrument uses 2 types of data, namely qualitative and quantitative data. The validity of the data was tested by determining the characteristics of the needs according to the perceptions of teachers and students. Data analysis used the score test (N-gain). The product effectiveness test used a one-group pretest-posttest design. The results showed that: 1) Collage module products based on natural materials have been suitable for use as learning media for early childhood teachers, 2) The product of the college module based on natural materials in quantum learning has been developed and meets the elements of the feasibility of the content of the learning material so that it can be used to strengthen the independent character of early childhood, 3) Collage module products based on natural materials in quantum learning have proven effectiveness in guiding early childhood students' independence and have theoretical and practical feasibility.

Keywords: Collage module, quantum learning, early childhood children's independence

1. Introduction

Early childhood education plays an important role in developing potential so that good character and personality can be formed. Character comes from the Greek word harassing which means to carve so that a pattern is formed. Character is a collection of values that lead to a system, which underlies the thoughts, attitudes and behaviours that are displayed (Mak, 2014).

Children's character can be formed through the teaching process by the teacher (Sanderse, 2013). The teacher teaches by explaining that children learn through listening and doing assignments that are dominated by sheets or children's workbooks (Turan & Ulutas, 2016). Children write numbers and letters/words without building a learning context first. In this situation, cognitive or intellectual aspects get the greatest stimulation, while other aspects such as emotional and artistic are almost ignored. The implementation of learning in early childhood is more focused on

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"academic activities" and ignores play activities such as wrong early childhood practices. Play is not only a vehicle for children's learning (Gray, 2017).

According to Zhang et al. (2021) collage is a two-dimensional work of art that uses a variety of materials as long as these basic materials can be combined with other basic materials which can finally be combined into a complete work and can represent the expression of the aesthetic feelings of the person who made it.

The results of the pre-observation conducted by researchers on Friday, September 10, 2021, with Mrs Esty Nur Indah as a teacher at KB Pertiwi Bersinar Langenharjo Margorejo Pati showed that the character of children's independence was not optimal, only around 60% of children had independent characters, while the remaining 40% of children do not yet have an independent character. Likewise, the results of the pre-observation conducted by researchers on Tuesday, September 21, 2021, with Mrs Nining Rintawati, S.Pd., as a teacher at KB Abu Bakar Ash Shidiq Margorejo Pati, showed that the character of children's independence was not optimal, only around 65% of children had have an independent character, while the remaining 35% of children do not have an independent character.

One of the causes of the less than optimal character of children's independence that has not emerged is the use of a guided learning approach that has characteristics centred on teacher teaching behaviour so that the creativity and character of children's independence are less developed. Therefore, researchers try to carry out learning through quantum learning with the main goal of being able to develop children's independent characters.

This college module applies technical techniques and analyzes the core competencies of early childhood, namely core competency 1, namely accepting the teachings of their religion. Core competence 2 is to have a healthy lifestyle, curiosity, creativity and aesthetics, confidence, and independence, core competence 3 is to recognize yourself, family, friends, educators, the surrounding environment, religion, technology, art, and culture at home, place playing and Raudhatul Anfal by observing with the senses (seeing, hearing, smelling, feeling, touching), ask, collect information, reasoning, and communicate through play activities.

The collage module that will be developed by the researcher has components, including a cover module. The appearance of the module cover is attractive, the cover is full colour and attracts children's attention. The preface contains the researcher's gratitude for the presence of Almighty God for having been allowed to compile a collage module based on natural materials, as well as an explanation that the information provided in this module has been designed and arranged in such a way that it is hoped that it can help readers more easily find and understand information related to media collage.

Based on observations made by researchers on October 1, 2021, in several Early Childhood Education in Pati, teachers do not use natural materials as a medium in the learning process. Teachers should be more creative in using natural materials that are around the child's environment because these natural materials can produce something new for children or can develop children's character.

This research was conducted on early childhood education in Margorejo Subdistrict, Pati Regency, but to facilitate the implementation of the research, the researchers only focused on two early childhood education, namely KB Pertiwi Bersinar Langenharjo Margorejo Pati and KB Abu Bakar Ash Shidiq Margorejo Pati. The two early childhood school were chosen because of the willingness of the management to provide information and data related to this research.

The phenomenon found in early childhood, Margorejo Pati District, is that many children litter, do not like to clean up after doing dirty activities while playing and leave everything to the teacher to clean it, after every snack usually children will like to throw away places and food packages without trying to see that used materials can be something useful. Children cannot yet create used plastic materials in the environment as play tools at school. Moving on from this phenomenon based on observations made by researchers on October 1, 2021, several problems were identified in early childhood, Margorejo Pati District as follows:

a. There are still early childhood children aged 3-4 years who do not yet have the character of independence. One of the proofs is that there are still children who are cared for by their parents.
b. Children do not get enough opportunities to form character.
c. The quantum learning model by playing collage based on natural materials has not been implemented in early childhood.
d. Collage based on natural materials in early childhood is rarely used, even though it is very easy for children to do and can stimulate children's character and creativity simultaneously.

Based on the background and identification of the problem above, the researcher only focuses on the development of the independent character of early childhood in Margorejo Pati District because it has not yet developed optimally. Figure 1 show the conceptual framework for this research.

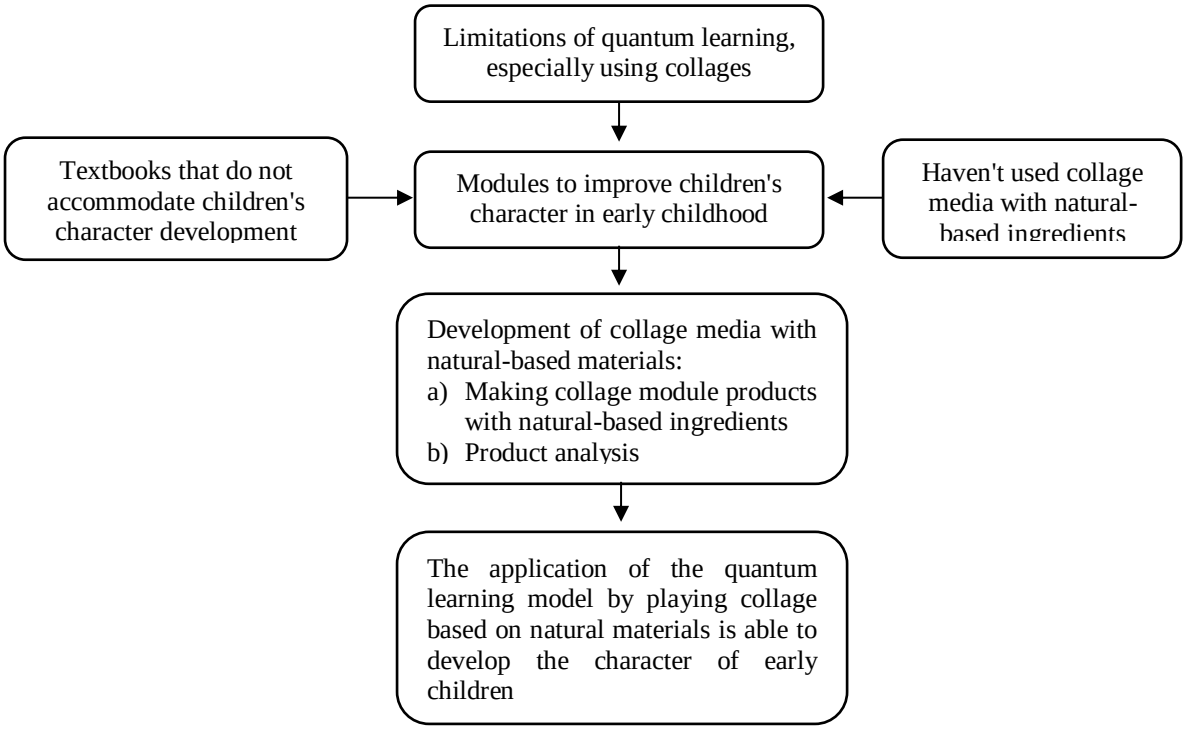

Figure 1. Conceptual framework

1.1 Research Objectives

The objective of this study is to identify the purpose and importance of a proposed study. The objectives of this study are:

a) To describe the collage module format based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District.
b) To describe the contents of the collage module based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District.
c) To describe the effectiveness of collage modules based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District.

1.2 Research Question

The study problem is built based on the objective of the study, while the study problem is as follows:

a) What is the format of the collage module based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District?
b) What is the content of the collage module based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District?
c) How effective is the collage module based on natural materials in quantum learning to strengthen the independent character of early childhood in the Margorejo Pati District?

1.3 Hypothesis

The hypothesis of this study is:

a) The format of the quantum learning module by playing collage based on natural materials is following the need of improving the character of early childhood in Margorejo Pati District.
b) Fill in the quantum learning module by playing a collage based on natural materials following the need of improving the character of early childhood in the Margorejo Pati District.
c) The quantum learning module by playing collage based on natural materials has been effective in improving the character of early childhood in the Margorejo Pati District.

2. Literature Review

2.1 Quantum Teaching Approach

De Porter and Hernacki (2012) define quantum learning as interactions that convert energy into light. All life is energy. DePorter & Hernacki analogized quantum learning with Einstein's principle of relativity, namely E = mc2, which means that the mass times the speed of light squared is equal to energy. Our physical body is matter. As students, our goal is to reach as much light as possible; interactions, relationships, and inspiration to produce light energy.

According to Anisa, Medriati, & Putri (2019), Quantum learning has the following principles: 1) everything speaks, meaning that the entire classroom environment should be designed to be able to carry learning messages that can be accepted by students, this means that the curriculum design and teacher learning design, information, body language, words, actions, movements, and all environmental conditions must able to speak brings learning messages for students, 2) everything has a purpose, meaning that all learning compositions without exception must have clear and controlled goals, 3) experience before naming means, before students learn to name (defining, conceptualizing, distinguishing, categorizing) they should have had experience with information related to the naming effort, 4) recognizing every effort, meaning that all learning efforts that have been made by students must obtain the recognition of teachers and other students. This recognition is important so that students always dare to go to the next section in learning, 5) celebrating success, meaning that every effort and result obtained in learning deserves to be celebrated. This celebration is expected to provide feedback and motivation for further progress and improvement in learning outcomes.

Cahyani et al. (2016) regarding Quantum Learning Models through Traditional Games to Improve Cognitiveness of Group B Children at Kumara Jaya Kindergarten Denpasar. The results of data analysis showed that the cognitive improvement of group B1 children in Kindergarten Kumara Jaya Denpasar in the second semester of the 2013/2014 school year after the Quantum learning model was applied through traditional games.

This is evidenced by the results in the first cycle of 57.70% in the low category, it increased to 94.03% in the second cycle in the very high category. Thus, it can be concluded that there was an increase in the cognitive percentage of children by 36.33% by applying the Quantum learning model to group B children in the second semester of TK Kumara Jaya Denpasar.

The steps that can be applied in learning through the concept of quantum learning are ambak's strength, structuring the learning environment, cultivating a champion attitude, freeing your learning style, getting into the habit of taking notes, getting used to reading, making students more creative, practice students' memory strength.

2.2 Module

The module is a unified whole, consisting of a series of learning activities, which have provided learning outcomes, which have actually provided effective learning outcomes in achieving clearly and specifically formulated goals. The module is the smallest unit of the teaching and learning program whose module elements consist of teacher guidelines, student activity sheets, worksheets, answer sheet keys, test sheets, and test sheet keys (Perdana et al., 2017).

Module development objectives 1) clarify and simplify the presentation of the message so that it is not too verbal, 2) overcoming the limitations of time, space, and senses, both students and teachers/instructors, and 3) appropriate and varied use, such as increasing students' motivation and passion for learning, developing the ability to interact directly with the environment and other learning resources, enabling students to learn independently according to their abilities and interests and enabling students to measure or evaluate their learning outcomes.

The benefits obtained from using the module are (Cloonan et al., 2020) such as 1) the module provides a lot of immediate feedback so that students can find out their learning outcomes, 2) students have the opportunity to achieve the highest score by mastering the subject matter completely, 3) the modules are structured in such a way that the objectives are clear, specific and can be achieved by students, 4) learning that guides students to achieve success through regular steps will create a strong motivation to try as hard as possible, 5) the module can be adapted to the differences of students, such as the difference between the speed and the way of learning, 6) the module reduces or eliminates as much as possible the sense of competition among students because all can achieve the highest results, and 7) the module intentionally provides an opportunity for remedial, namely correcting the weaknesses, mistakes or shortcomings of students which students can immediately find on their own based on the evaluations given individually.

The steps in compiling a module are as follows Najuah, Lukitoyo, & Wirianti (2020) is 1) determination of competency standards and plans for teaching and learning activities, 2) analysis of learning module needs, 3) drafting of learning modules, 4) trial, 5) validation, and 6) revision and production.

2.3 Play Collage Based on Natural Ingredients

Play is a necessity for children because through playing children will gain knowledge that can develop their abilities. Playing is an activity that is unique and very different from other activities such as studying and working which are always carried out to achieve a final result (Hou, 2012).

All early childhood has creative potential but the development of creativity is very individual and varies from one child to another. The four principles of play are (Graciun, 2010).

a) In playing children develop systems to understand what is going on in order to achieve more complex goals
b) Ability to put the other person's perspective through the rules and negotiate the rules of the game
c) Children use replicas to replace real objects, then they use new, different objects
d) Caution in playing may occur because children need to follow the rules of the game that have been determined by their playmates.

There are six characteristics of play activities in children that the stimulator needs to understand, namely 1) play comes from within the child, 2) play must be free from binding rules, activities to be enjoyed, 3) play is a real or real activity, 4) play should be focused on the process rather than the result, 5) play must be dominated by players, and 6) play must involve the active role of players.

A collage is a two-dimensional work of art that uses a variety of materials that can be combined with other basic materials which can eventually be combined into a complete work (Choffrut & Durak, 2005). Materials for making collages can be in the form of used materials from magazines, newspapers or calendars, bottle caps, candy wrappers, plastic, and unused patchwork (Anuar, Nizar, & Ismail, 2021). Collage has various advantages, namely, it can train children's fine motor skills, increase creativity, recognize colours, recognize shapes, recognize various types of materials, recognize material properties, train perseverance, train spatial skills, practice problem solving, and increase self-confidence. Collages can train the fine motor skills of kindergarten-age children in addition to coordinating eye and hand movements (Masyitoh & Efendi, 2020).

2.4 Understanding the Character of early childhood Children

According to Khaironi (2017), the word character is familiar to anyone who hears it. In everyday life, it is very often mentioned, both when seeing someone behave well or behave badly. Character is defined as psychological, moral, or character traits. The character can also be interpreted as a character, namely temperament or actions that are always carried out or habits. There are four types of characters that have been known and implemented in the educational process, namely as follows Arthur (2019).

a) Character education is based on religious values, which is the truth of God's revelation (moral conservation)
b) Character education is based on cultural values, among others in the form of character, Pancasila, literary appreciation, exemplary historical figures and national leaders (environmental conservation)
c) Environmental-based character education (environmental conservation)
d) Character education is based on self-potential, namely personal attitude, the result of the awareness process of self-potential empowerment directed at improving the quality of education (humanist conservation).

2.5 Grouping of Character Values

Character values can be grouped into five main values (Khaironi, 2017).

a) Character values with God, namely: one's thoughts, words, and actions are always strived to be based on divine values or religious teachings.
b) Character values with oneself, such as honesty, responsible, healthy lifestyle, discipline, hard work, self-confidence, entrepreneurial spirit, and logical thinking independence.
c) The value of the character of the relationship with others, namely being aware of the rights and obligations of self and others, obeying social rules, and being able to empathize and sympathize with others.
d) Character values are related to the environment, which is related to social and environmental care, such as protecting the environment and not doing damage.
e) National values are related to placing the interests of the nation and state above self and group interests. Character values in the form of nationalism and respect for diversity.

Nuraeni (2014) explain character values in early childhood, namely 1) honesty, 2) discipline, 3) tolerance, and 4) independence.

3. Methodology

The research model used is Research and Development (R&D), R&D is a research method that produces a new product or refines an existing product (Sugiyono, 2015). In the quantum learning module research by playing collage based on natural materials to improve the character of early childhood in Margorejo Pati District, researchers used seven of the

ten steps in the Borg and Gall research and development model. The steps are as follows: 1) potential and problems, 2) collecting data, and 3) product design.

The data sources in this study were early childhood students in Margorejo Pati District. The test subjects were 2-5 early childhood students. In the experimental class, there were 5 students and 5 students in the control class. The type of data collected from this research comes from needs analysis data, validity data, acceptability data and effectiveness data. Data collection techniques that researchers use are data collection techniques: 1) observation, 2) interview and 3) questionnaire.

In this study, the researcher uses 2 types of data, namely qualitative data which the researcher converts into numbers in quantitative data. The development of expert instruments and potential users is based on the following grid 1) education expert assessment instrument, and 2) learning media expert assessment instruments.

3.1 Data Validity Test

The purpose of a validity test is to determine how closely the measurement being made corresponds to the instrument being used to make it. According to Ghozali (2009), a validity test is used to assess a questionnaire's reliability and accuracy.

a) Needs Analysis
How to determine the percentage of answers to each question item with the formula:

$$\%f = \frac{f}{N} x100 \quad (1)$$

b) Data Analysis of Collage Media Validity Test Based on Natural Materials
This assessment is obtained by presenting prototypes of teaching materials to experts with the provided assessment sheet.

c) Analysis of Student Character Performance
This performance assessment was carried out in the control class and the experimental class. The formula used is:
- Average student character

$$\text{Average} = \frac{Total\ Score\ of\ All\ Students}{Total\ students} \quad (2)$$

- Percentage of student character completeness

$$\text{Percentage} = \frac{Number\ of\ students\ who\ achieved\ KKM}{Total\ students} \text{ x } 100\% \quad (3)$$

3.2 Analysis of The Effectiveness of Using Natural Material-Based Collage Media

Analysis of the performance assessment results of early childhood character development. To determine the level of effectiveness of collage media based on natural materials on the development of children's character, it can be seen using the Score Test. N-gain with the following formula:

$$\text{N-Gain} = \frac{Spost - Spre}{Smax - Spre} \quad (4)$$

Comparative analysis of the average performance results and the percentage of early childhood character development was also carried out in the control class and the experimental class. Comparing the average and complete performance of early childhood character development between the control class and the experimental class with the formula:

$$t = \frac{X_1 - X_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (5)$$

Research on the development of natural material-based collage media to develop early childhood characters is said to be successful if the collage media based on natural ingredients developed met the criteria for media validity by media experts, natural material-based collage media meet the effective criteria with more than 75% of students mastering early reading through early childhood character development assessment sheets and more than 75% of students have completed early childhood character development which is tested by a post-test skills test.

4. Results and Discussion

The results of the needs analysis can be presented as follows: 1) results of the analysis of collage learning media needs for early childhood education students in Margorejo Pati District show the children seemed less enthusiastic and not interested in the teacher's explanation. The results of the analysis of collage learning media needs for early childhood education teachers in Margorejo Pati District were made on several 2 teachers at the Pertiwi Bersinar KB Langenharjo Margorejo Pati and the Pembina District State Kindergarten 1 teacher in group B at KB Pertiwi Bersinar Langenharjo Margorejo Pati and 1 teacher in group B at KB Abu Bakar Ash Shidiq Margorejo Pati). The results of observations made by researchers, teachers in learning use media that children have often seen, media are less attractive and teachers explain less interactively with children. The results of the analysis of collage learning media needs for early childhood Parents in Margorejo Pati District were made on parents at KB Pertiwi Bersinar Langenharjo Margorejo Pati and KB Abu Bakar Ash Shidiq Margorejo Pati when parents dropped off and picked up their children. For KB Abu Bakar Ash Shidiq Margorejo Pati because PTM is limited only 50% of children enter.

The following are research and information collection that has been carried out by researchers. Namely, research the material in the illustrated story media by interviewing the Head of KB Pertiwi Bersinar, Langenharjo Margorejo Pati and Interview with Head of KB Abu Bakar Ash Shidiq Margorejo Pati. The results of making the module will be described in the following discussion points. Collection of Materials and Images for Media and Design is a collage module based on natural materials such as 1) making background designs, 2) the process of inserting an image in the background, 3) the process of entering written material according to the type of collage in the image, 4) change the background to make it more interesting, 5) media printing and binding process.

This product development is carried out through expert judgment. The expert test of acceptance and feasibility of this development product gave the following results: 1) the feasibility of the guide format to determine the clarity of writing and the attractiveness of the guide design by learning media experts, 2) the feasibility of the content of the learning material in the module by learning experts, 3) content assessment learning materials by potential users to find out the appropriate procedure.

The product development effectiveness test was conducted using a one-group pretest-posttest design. The product effectiveness test involved 6 early childhood students in two schools, namely 3 students at KB Abu Bakar Assidiq Margorejo Pati and 3 students at KB Pertiwi Bersinar Margorejo Pati.

Based on the results of the assessment and trial of the collage module product based on natural materials in quantum learning to strengthen the character of the independence of early childhood in Margorejo Pati District, there are several things to improve and refine the product. The product of this development research is a collage guide based on natural materials in quantum learning to strengthen the independent character of early childhood. The following product specifications will be developed:

a) Guide Format
   The book display on the cover is designed in full color format, the colors are dominated by yellow and red and there are pictures of boys and girls going to school, surrounded by geometric shapes with the words "Collage is Fun". This manual is B5 size (25.7cm x 18.2cm) and Times New Roman writing font with font size 12 to make it clearer and more effective.
b) Contents of the Guidebook
   - Foreword. This section is about expressing gratitude to those who assisted in completing the guide.
   - Table of contents. This section describes the list of pages for each chapter in the learning module guide.
   - Part I Introduction presents the urgency of the need for guidance on developing quantum learning modules by playing collage based on natural materials to improve the character of early childhood. It then explains the purpose of the manual and the user's goals of the guide.
   - Part II Learning Materials with Collage Media. This chapter contains explanations related to collage media materials made from natural materials which include five main materials, namely animal-shaped collages, plant-shaped collages and geometric-shaped collages. This chapter is equipped with a guide or working instructions that are written briefly in language that is easy for children to understand.
   - Part III Specific Instructions for Quantum Learning Scenarios by Playing Collages Based on Natural Materials. This chapter contains an explanation of learning design ranging from core competencies and basic competencies of quantum learning modules by playing collage based on natural materials to learning activities for each meeting.
   - Part IV Preparation of the lesson plan. This chapter contains an explanation regarding the guidelines for preparing lesson plan based on Minister of Education and Culture Regulation Number 103 of 2014.
   - Bibliography: This section contains the literature sources used in making this manual.
   - Appendix: This section contains collage tools used in the learning process.

The discussion is an effort to understand the research findings systematically, and in depth from each variable or subject and/or object of research. The study of the results of the analysis of the format of the quantum learning module by playing collage based on natural materials is based on the assessment of learning media experts with the assessment

results obtained, namely numerical data and verbal data. Numerical data were obtained from filling in the learning media expert instrument with an average index validation of 3.68 which was included in the high category.

The results of the assessment of the data on the number of filling in the learning expert instrument obtained a validation index score of 66 and an average index of 3.68 which was included in the high category so it could be used as a learning module and had acceptance of the writing format and cover in the learning module so that it could make it easier for teachers to read and write interesting.

Data analysis in this effectiveness test used a non-parametric statistical test, namely the Wilcoxon signed ranks test. Based on the results of the Test Statistics output, the Z count is 3.021b and the Asymp Sig. (2-tailed) 0.032 0.05 level. It can be concluded that there is a significant increase in the independence score of early childhood after the posttest compared to before being given treatment during the pretest, so it is stated that the collage module based on natural materials in quantum learning is effective for strengthening the character of independence of early childhood in Margorejo Pati District.

5. Conclusion and Recommendation

Collage module products based on natural materials in quantum learning to strengthen the independent character of early childhood in Margorejo Pati District have been developed and meet the elements of the feasibility of the guide format, namely the feasibility of systematic presentation, writing, and graphics. Collage module products based on natural materials in quantum learning for early childhood in Margorejo Pati District have been developed and meet the elements of the feasibility of learning material content so that they can be used to strengthen the independence character of early childhood. Collage module products based on natural materials in quantum learning for early childhood in Margorejo Pati District have been developed and have evidence of effectiveness in directing early childhood students' independence.

The implication of research results is the involvement of research results with the expected benefits. The implication of developing a collage module based on natural materials is the involvement of the module in developing the independent character of early childhood. Theoretical Implications: the results showed that the development of the module affected the development of the independent character of early childhood. Practical Implications: The use of collage modules based on natural materials makes early childhood learning more interesting, effective, and fun, this can be seen when children begin to develop their independence in learning when children start making work. Pedagogical Implications. This study provides an overview of developing modules to support the success and effectiveness of learning in the classroom by making interesting and fun media for children.

The utilization of collage module products based on natural materials in quantum learning for early childhood can be used by early childhood teachers to improve the character of children's independence. Several other schools and certain areas in Pati have different value backgrounds, so it is possible to differ in the effectiveness of collage modules based on natural materials in quantum learning in early childhood to improve the character of children's independence.

This research is beneficial for the scientific development of models for improving children's character, especially the use of creative art models of playing three-dimensional collages using used materials to improve the character of children's independence in Kindergarten, and adding references for other researchers or further research, especially on the same object and different places. Furthermore, help stimulate the development of the independent character of early childhood aged 3-4 years through a three-dimensional collage play model using used materials, provide information and inspiration about the use of a three-dimensional collage model using used materials to improve the independent character of early childhood aged 3-4 years so that teachers are interested in deepening and applying it, and as information and consideration in making policies regarding improving the ability of teachers to stimulate the independence character of early childhood aged 5-6 years through playing three-dimensional collages using used materials.

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Conflict of Interest

The authors declare no conflicts of interest.

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