

# Inquiry-Based Learning (IBL) Approach in The Artwork Production of Visual Arts Education in Primary School Using Dry Media

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## Abstract

Visual Arts Education (PSV) is a familiar topic at both the primary and secondary school levels. This course becomes one of the most crucial electives for helping students achieve their best degree of creativity. This study was done to assess the efficacy of inquiry-based learning (IBL) in the development of artworks utilising dry media. The choice of dry media was based on its extensive use in primary school art creation. In the study done by the researcher, a total of 25 respondents comprised of second-year students were chosen at random. This research collects both quantitative and qualitative data. This study's assessment tool was comprised of questionnaires and document analysis from respondents. In conclusion, the IBL strategy is believed to boost students' level of comprehension and motivation when producing Visual Arts Education (PSV) artworks utilising dry media.

**Keywords:** Visual Arts Education, PSV, Dry Media, Inquiry-Based Learning Approach, Primary School.

## Introduction

The subject of Visual Arts Education is one of the branches of knowledge that is able to develop the creativity of students not only in the production of a work of art but also able to help students solve problems critically and creatively, producing a balanced human being in terms of physical, emotional, spiritual, intellectual and personality (Belle et al., 2018). The subject of Visual Arts Education can be considered close to the hearts of students, especially at the primary school level (Jamie, 2010). The use of colours, shapes and various other elements of art and design principles is a preparation that is able to attract students in the early stages of schooling to learn and deepen new knowledge (McFarlane, 2011). Pupils who are new to school tend to learn through their visuals before getting to know the basics of 3Rs, which are reading, writing, and arithmetic.

## Problem Statement

Pupils, especially in primary schools, tend to face exploration problems in the subject of Visual Arts Education. The pandemic that has hit the world since the beginning of 2020 has caused students to be dropping out of various things including in terms of learning activities

(Thongkoo et al., 2019). There are many visual art terms and languages that students have not yet mastered. The digital learning approach to some extent affects students' skills in exploring hands-on subjects such as Visual Arts Education. Exploration of materials in the field of Visual Arts is very important because, through the variety of materials and media, students can learn noble values indirectly such as frugality and self-confidence, and be able to compare the differences between all types of materials and media used before producing a work of art. As a result, students can learn how to make decisions and be more independent in the future (McKinney, 2021). Students will also be able to solve problems and think critically and creatively.

## Literature Review

### Inquiry-based Learning (IBL) Approach

The inquiry-based learning (IBL) approach has been introduced in 1998. Among the researchers who introduced the IBL approach are White and (Frederiksen, 1998; Bybee et al., 2006). White and Frederiksen (1998) proposed five phases of the inquiry cycle namely questioning, predicting, experimenting, modelling, and applying. The first phase of learning begins with a question and answer technique between the teacher and students. Next, the second phase is predicting, followed by the third phase which is experimenting. The fourth phase is to make a model and the fifth or final phase is to apply the knowledge learned.

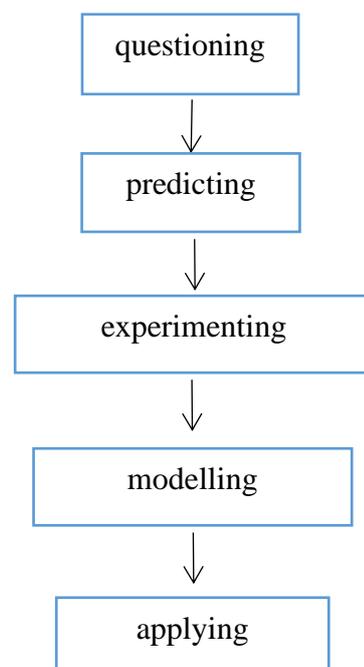


Figure 1: Five phases of the White and Frederiksen (1998) Inquiry Cycle

Bybee et al (2006) have proposed the 5E Learning Cycle Model, namely Engagement, Exploration, Explanation, Elaboration, and Evaluation. The first phase, Engagement, is the involvement of students in the teaching and learning process. After students are involved in learning, students will begin to make Exploration. Next, processes of Explanation and Elaboration take place to explain the findings of the exploration that has been carried out by the students. Finally, students and teachers will evaluate the learning activities that have been carried out.

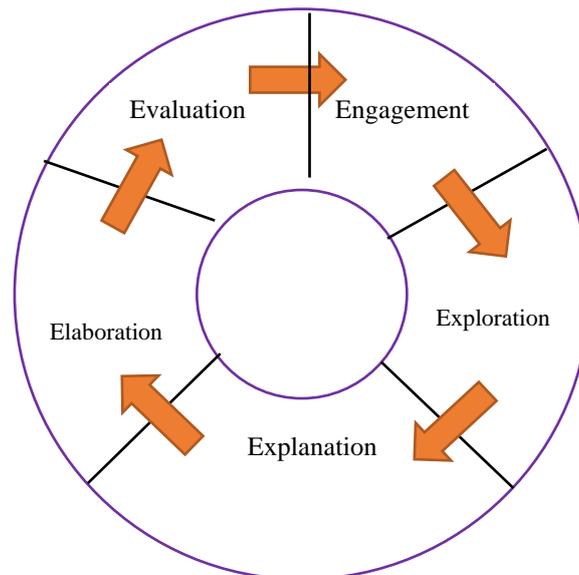


Figure 2: 5E Learning Cycle Model by Bybee et al (2006)

**Jean Piaget's Theory of Cognitive Development**

The Theory of Cognitive Development was presented by Jean Piaget in 1929. Piaget suggested that children’s intellectual skills change over time. As they age, children will interpret the world differently. He believes that children build knowledge by thinking before acting physically. Children are constantly rearranging their ideas about the world as they interact with humans or objects. This theory discusses the developmental stage of children from birth to early adolescence (Piaget, 1929). There are 4 stages of child development that have been discussed in the theory. The developmental level of children can be referenced based on the following table.

Table 1

*Levels of children's cognitive development based on Jean Piaget's Theory of Cognitive Development*

Stage	Approximate Age Range	Description
<b>Sensorimotor</b>	Birth – 2 years	<ul style="list-style-type: none"> <li>• Infants and toddlers understand the world in terms of physical actions on the environment.</li> <li>• Infants move from simple reflexes to an organized set of behaviors.</li> </ul>
<b>Preoperational</b>	2 – 7 years	<ul style="list-style-type: none"> <li>• Young children concentrate on constructing a world of permanent objects.</li> <li>• Preschool children can use mental symbols to represent objects and events.</li> <li>• Language is developing rapidly through dramatic play.</li> <li>• Social games and games with rules emerge as children become increasingly involved in social play with peers.</li> </ul>
<b>Concrete Operational</b>	7 – 11 years	<ul style="list-style-type: none"> <li>• Children’s reasoning skills become more logical.</li> <li>• Thinking becomes decentered, dynamic and reversible.</li> <li>• Children can organize objects into hierarchies of classes.</li> <li>• Children have developed a theory of mind, although they may still have difficulties taking on the perspective of another person.</li> <li>• Children are beginning to take intentions into account in their moral judgments.</li> </ul>
<b>Formal Operational</b>	11 years on	<ul style="list-style-type: none"> <li>• Adolescents can think systematically, can reason about abstract concepts, and can understand ethics and scientific reasoning.</li> <li>• Adolescents can generate hypotheses.</li> <li>• Moral reasoning has evolved to understand that rules are a result of mutual agreement</li> </ul>

Source: Piaget (2000)

The stage of concrete operation, which is between the ages of 7 to 11 years, has been linked in this study. At this age, children can already explain the reasons for something that happened. At this age too, children have been able to think logically and make connections between their prior knowledge. They also can apply the knowledge they have learned to their daily lives.

### Howard Gardner's Multiple Intelligence Theory

The Theory of Multiple Intelligences was founded by Howard Gardner in 1983. In this theory, Gardner (1983) emphasised that intelligence can be defined in three ways. Firstly, intelligence is possessed by all human beings. Second, the intelligence possessed by all these human beings varies. Third, human beings use their respective intelligence to achieve their own goals. The Theory of Multiple Intelligences introduced by Gardner is one of the most important theories because humans are interpreted to have different bits of intelligence from each other. There are eight types of multiple intelligences that have been put forward in this theory. The following figure shows a list of eight types of multiple intelligences.

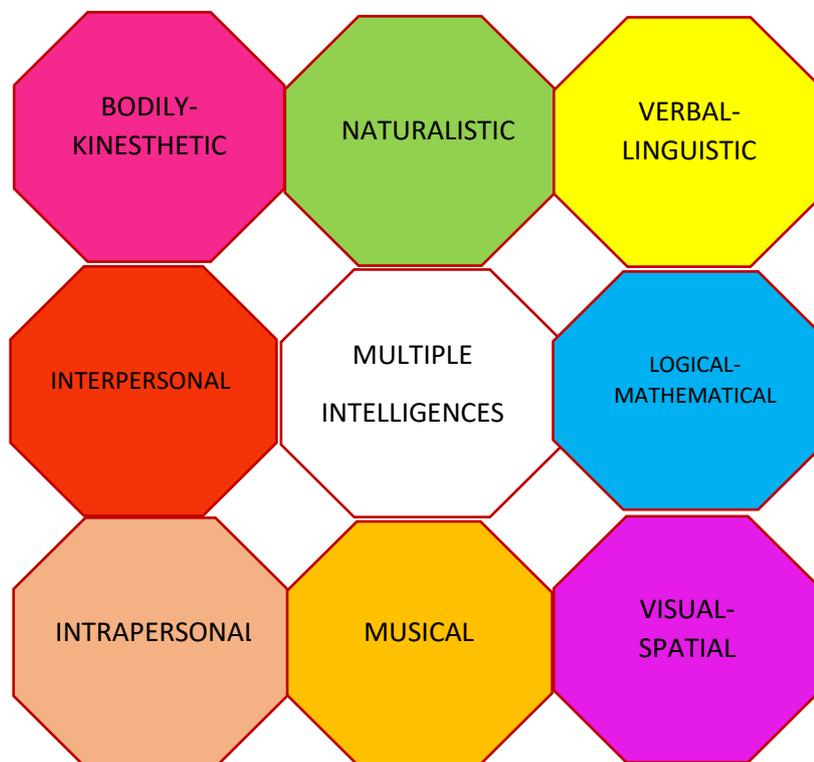


Figure 3: Eight intelligences in Howard Gardner's Theory of Multiple Intelligences (1983)

In this theory of multiple intelligences, Howard Gardner states eight intelligences as the basis of the formation of this theory. One of the intelligences that has been mentioned is visual-spatial intelligence. It is this visual intelligence that will be linked to the IBL approach that will be implemented to the respondents. Visual document analysis is widely used in the subject of Visual Arts Education.

### Research Objectives

- To investigate whether the inquiry-based learning (IBL) approach improves student understanding in Visual Arts Education.
- To identify whether the inquiry-based learning (IBL) approach is able to increase students' interest in Visual Arts Education.

### Research Methodology

The study conducted by researchers uses a mixed-method design, which are quantitative and qualitative. For this study, the use of these two methods can produce more accurate and precise research findings. Exploratory-based studies especially for Visual Arts Education need to use the document analysis method as one of the data analysis methods (Justin and Joanna, 2021). The instrument used in this study is a questionnaire form for the quantitative method. This questionnaire will be distributed to the respondents to see the level of understanding and motivation of students in the IBL approach in PSV subjects. As for the qualitative method, the researcher will be using document analysis instruments in the form of works of art.

The respondents that have been taken are a total of 25 Year 2 students at one of the schools in the Hulu Selangor district, Malaysia. A total of 13 female students and 12 male students were involved in this study. These students have been randomly selected and have a level of mastery between medium and weak. Data analysis was carried out using SPSS application software. The data display has been presented in the form of an infographic. The results of the study are discussed in the study findings section.

This study was conducted using the Kemmis and McTaggart (1988) model. The Kemmis and McTaggart model was chosen because it is suitable to be carried out in the form of action research. The following are the steps planned to be carried out in the study.

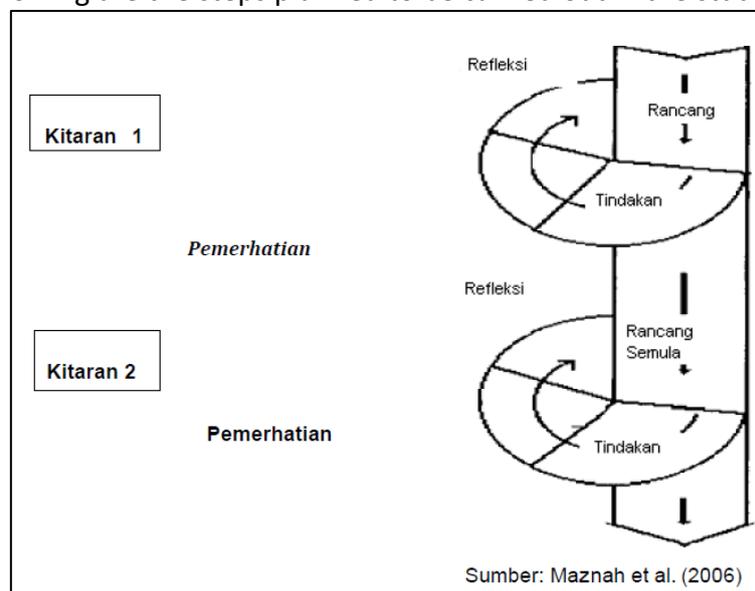


Figure 4: Action research cycle by Kemmis and McTaggart Model (1988)

Based on the Kemmis and McTaggart (1988) model, the researchers have planned a suitable way to implement the IBL approach in teaching and learning for Visual Arts Education subjects using dry media. The following are the teaching and learning steps that will be implemented in the study.

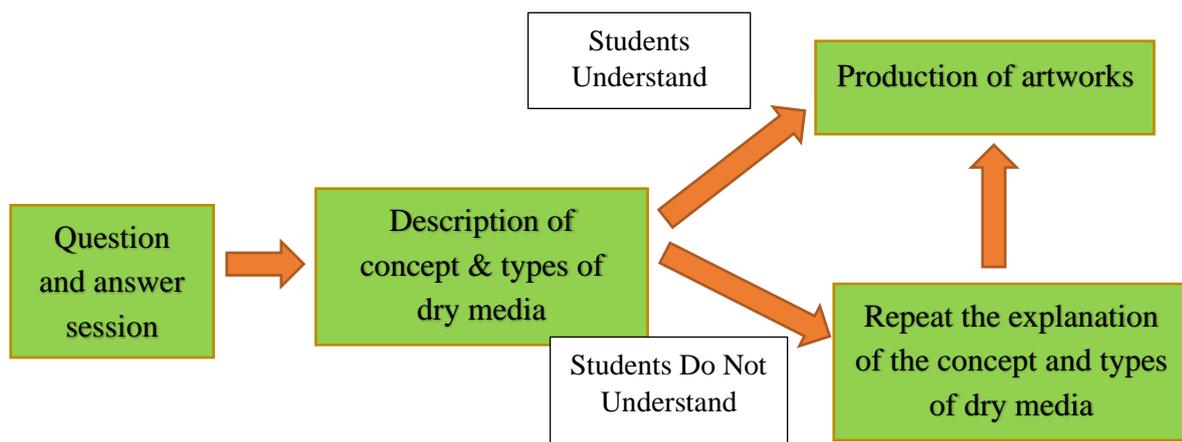


Figure 5: Action research implementation process

### Research Findings

The results of the study found that there was a positive development in the respondents after the inquiry-based learning (IBL) approach was implemented in the subject of Visual Arts Education in producing artworks using dry media. There are two types of instruments that have been used in this study, namely questionnaires and document analysis. At the initial stage of the study, the researcher first explained the definition of dry media to students in teaching and learning. Next, in order to trigger curiosity and inquiry in the students, the researcher then held a question-and-answer session as an induction set before the work-producing activity was carried out. The students will ask questions while the researcher will encourage the students to think together and find answers to each question that they raise.

### Questionnaire

There are 10 questionnaire items that have been asked to the respondents. This questionnaire uses a Likert Scale from 1 to 5.

Table 2

*Likert Scale and indicators*

SCALE	INDICATORS
1	Strongly Disagree (SD)
2	Disagree (D)
3	Neutral (N)
4	Agree(A)
5	Strongly Agree (SA)

The 10 items of this question are designed to find out the level of understanding and interest of the respondents in the subject of Visual Arts Education. Question details are based on the following table

Table 3

*10 items in the questionnaire*

<b>BIL</b>	<b>ITEM</b>
S1	The explanation given by the teacher is easy to understand.
S2	Pupils know how to use each type of dry media.
S3	Students can compare the different types of dry media.
S4	Students know the function of each type of dry media.
S5	Students are interested in knowing the types of dry media.
S6	Pupils are interested in exploring every function of dry media types.
S7	Students are always confident in performing the artwork according to the requirements of the assignment.
S8	Student motivation increases with the IBL approach in Visual Arts.
S9	Pupils feel happy while studying Visual Arts subject.
S10	Pupils are eager to complete artwork using dry media.

Of the 10 items in the questionnaire, items S1 to S4 are items that test students' level of understanding of the use of dry media. While S5 to S10 are items related to students' attitudes, motivations, and affectives after the IBL approach is implemented in the Visual Arts subject in the production of artworks using dry media.

The following are the results of the study that have been analysed using SPSS software.

Table 4

*Results of the study in frequency data, mean and standard deviation*

No	ITEM	FREQUENCY						
		SD	D	N	A	SA	MEAN	SD ( $\sigma$ )
S1	The explanation given by the teacher is easy to understand.	0	1.0	5.0	13.0	6.0	3.96	0.79
S2	Pupils know how to use each type of dry media.	0	0	6.0	16.0	3.0	3.80	0.58
S3	Students can compare the different types of dry media.	0	2.0	8.0	9.0	6.0	3.76	0.93
S4	Students know the function of each type of dry media.	0	2.0	5.0	13.5	4.5	3.80	0.82
S5	Students are interested in knowing the types of dry media.	0	1.0	5.0	10.0	9.0	4.08	0.86
S6	Pupils are interested in exploring every function of dry media types.	0	1.0	4.0	13.0	7.0	4.04	0.79
S7	Students are always confident in performing the artwork according to the requirements of the assignment.	0	0	7.0	12.0	6.0	3.96	0.74
S8	Student motivation increases with the IBL approach in Visual Arts.	0	0	5.0	13.0	7.0	4.08	0.70
S9	Pupils feel happy while studying Visual Arts subject.	0	0	1.0	15.0	9.0	4.32	0.56
S10	Pupils are eager to complete artwork using dry media.	0	1.0	5.0	10.0	9.0	4.08	0.86

Average mean score: 3.98 (Moderate-High)

Standard deviation: 0.76

The data shows that the average mean score of 3.98 is moderately high. The standard deviation is 0.76. This shows that the IBL approach can be implemented as one of the appropriate approaches in Visual Arts Education subjects. The Year 2 students who are involved as respondents are partly made up of students who are between the medium and weak mastery levels. In implementing the teaching and learning process, teachers need to repeat the steps of the induction set which is question and answer, and apply thinking skills

among students so that the IBL approach can be successfully implemented in Visual Arts teaching and learning.

For item S1, respondents indicated that they understood the explanation of concepts given by the teacher (mean=3.96, SD=0.79). While for item S2, the average respondent agreed that they know how to use dry media in the production of works (mean=3.80, SD=0.58). There are still a few respondents who do not agree with item S2. Nevertheless, this study can still be conducted on respondents to get better results in the future. For items S3 and S4, these two items show that respondents can compare the differences between types of dry media (mean=3.76, SD=0.93) and also know the function of dry media (mean=3.80, SD=0.82). However, there are also a few respondents who disagree with items S3 and S4. Among the factors that cause respondents to disagree with items S3 and S4 are socioeconomic factors. Some of these respondents consist of the aboriginal people who have limited access to the city to buy art tools and materials, and there are also those who are less able to own and use various types of dry media.

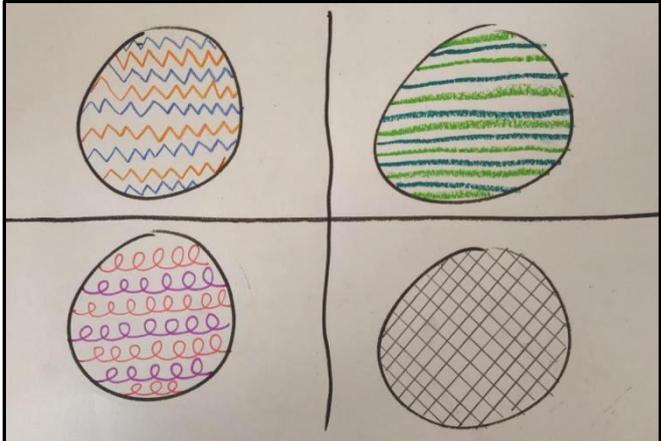
For items S5 and S6, many of the respondents stated that they agree that the IBL approach increases students' interest in knowing the types of dry media (S5: mean=4.08, SD=0.86) and explores the function of each type of dry media (S6: mean= 4.04, SD=0.79). 52% of respondents were able to name at least five types of dry media, namely colored pencils, crayons, oil pastels, magic colors, and pencils. They are also able to state the function and ingredients of each type of dry media. Respondents are also able to choose the appropriate dry media in the production of their artwork. This is shown through data from items S7 (mean=3.96, SD=0.74) and S8 (mean=4.08, SD=0.70).

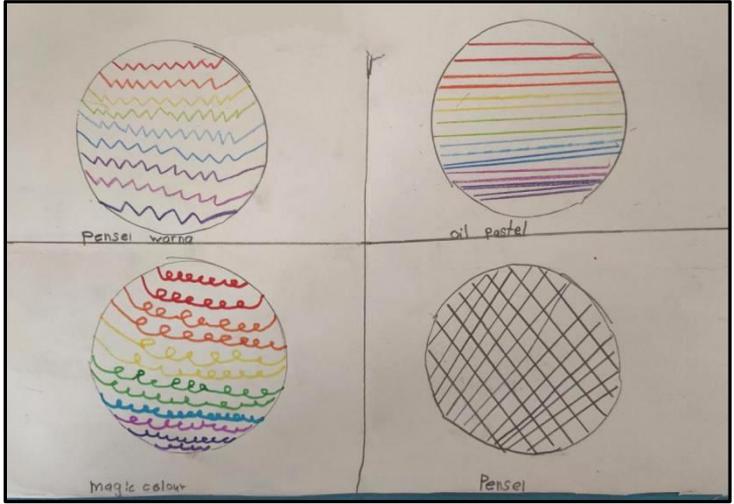
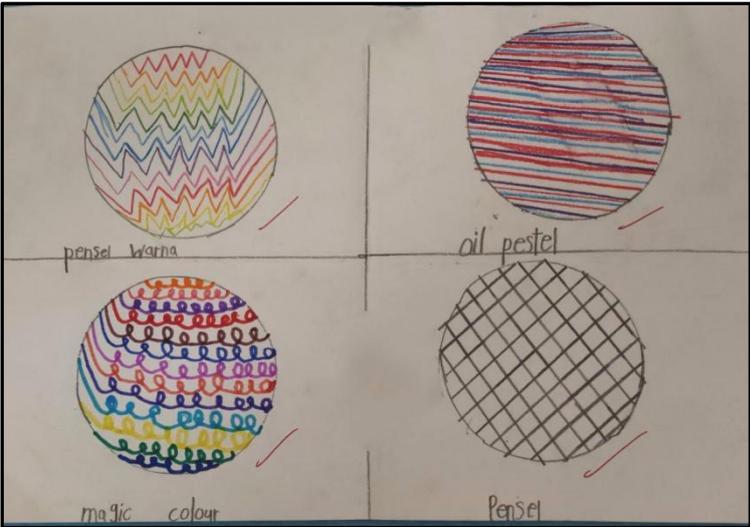
Finally, in terms of affectivity, there is a significant improvement that can be seen through items S9 and S10. On item S9 (mean=4.32, SD=0.56), respondents felt happy while studying the Visual Arts subject. The IBL approach that is applied during the teaching and learning process can to some extent help students learn how to explore through their inquisitiveness and curiosity. This can also be linked to the increase in students' intrinsic motivation to learn. Pupils can better understand something learned and try to think of ways to complete art assignments in a more creative and innovative way. However, for item S10 (mean=4.08, SD=0.86), it can be observed that students still need to be guided to complete the task because their level of mastery is moderate and weak.

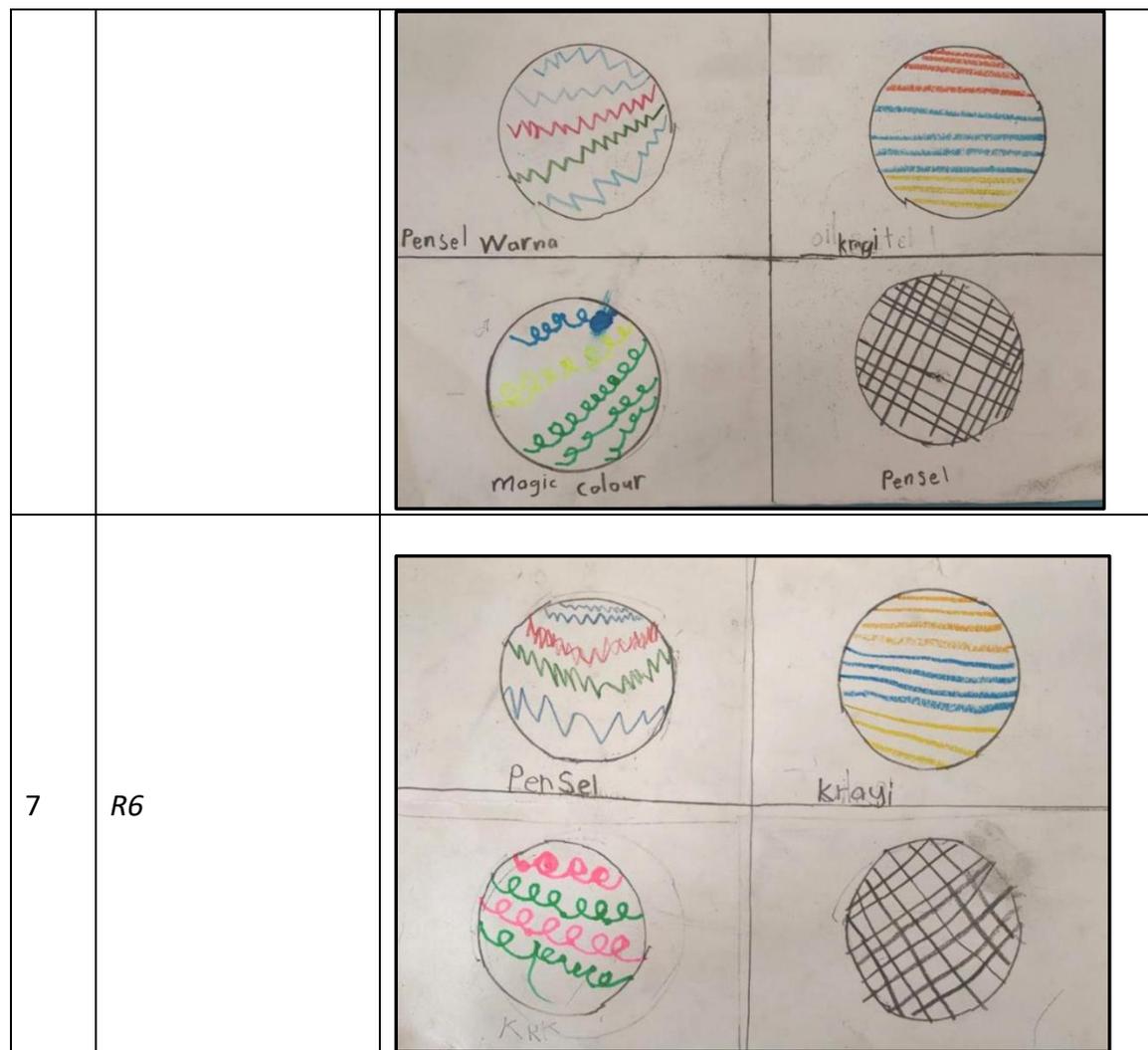
### **Document Analysis**

The researcher has also analysed the results of the respondents' work as one of the research instruments. In this study, the researcher has used four main types of dry media, namely colour pencils, oil pastel, magic colour, and pencils. These four dry media were chosen because these materials are cheap and easily available at stationery stores or regular grocery stores. First of all, examples of the teacher's work are displayed in front of the class as one of the teaching aids for the induction set. Then, a question and answer session between the teacher and the students is conducted in the classroom. Next, the teacher explains the concept of dry media. Pupils need to think and express the material of each dry media used as well as its function according to the appropriateness in the production of artwork.

Table 6  
 Part of the respondent's artwork

No	RESPONDENTS	ARTWORKS
1	EXAMPLES OF TEACHER'S ARTWORKS	
2	R1	

3	R2	
4	R3	
5	R4	
6	R5	



Based on the findings of the study, it can be seen that there are three aspects of the IBL approach that have shown results in this study. First of all, respondents choose the colours used in this dry media exploration. Each colour used by each respondent is different. This shows that the respondents are curious and explore for themselves interesting colour matches in the production of their works. Second, respondents R5 and R6 are seen replacing oil pastel dry media with dry media that have almost similar properties, namely crayons. As we all know, oil pastel dry media is made from oil, while the basic material for making crayons is wax. Both of these materials have a common feature in the production of works of art, which has the property of resin (waterproof). Based on the IBL approach applied by the students, the respondents have chosen to replace oil pastel dry media with crayons in the dry media exploration session. Third, the IBL approach was seen to be successfully applied by the students when there were a few respondents (R1, R2, R4, and R5) who used a round template like the base of a water bottle to make 4 circles as in the work. This shows that, with the existence of students' curiosity and inquiry, the students successfully solve the problem to make a circle by trying to use circular templates that are easily available around them. By encouraging their curiosity and willingness to try new concepts will trigger critical, creative, and innovative thinking among students.

## **Conclusion**

Based on the results of the research that has been presented from these two research instruments, it is proven that the inquiry-based learning (IBL) approach in the teaching and learning of Visual Arts Education using dry media on Year 2 students can increase the level of understanding and motivation of students - especially students who have a moderate and weak mastery level. The sense of curiosity and courage to try that is naturally present in children (Piaget, 1929) needs to be carefully shaped by educators so that future generations are not influenced by unhealthy activities. Teachers as educators, facilitators, and guides need to be more proactive in encouraging students to think more critically and innovatively (Archer-Kuhn et al., 2020). Visual Arts Education subjects will become more interesting if teachers can guide students' imagination and creativity towards more structured and meaningful learning. In addition, the IBL approach is also expected to be expanded further in other subjects, whether core or elective. The balance between these subjects will further develop children's potential, especially in the early stages of schooling in terms of physical, emotional, spiritual, intellectual, and personality in line with the objectives of the National Education Philosophy.

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