

Implementation of the Index Card Match Learning Model Assisted by QR Code Cards in Science Learning for Grade V Elementary School

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Article history

Submitted: 2026/04/15; Revised: 2026/05/22; Accepted: 2026/09/05

Abstract

Through education, students are expected to have spiritual knowledge, be able to control themselves, have a good personality, be intelligent, have noble character, and have the skills needed in life. This study aims to determine the completeness of the learning outcomes of IPAS students in Class V of SD Negeri Purwodadi. The research method used is a quantitative approach of Pre-experimental design techniques with a One group pre-test and post-test design. The population in this study is all classes V of SD Negeri Purwodadi and the research sample totals 27 students. Data collection was carried out by a test technique consisting of 16 multiple-choice questions. The collected data was analyzed using the z-test. The results of this study are based on the results of the z-test analysis with a significance level of 5% ($\alpha = 0.05$) obtained Zcount (5.50) > Ztabel (1.64), H_0 is accepted and H_0 is rejected. The average score of student learning outcomes in the initial test was 45.74 and the final test was 77.63 and students with an average increase of 31.89 with a percentage of learning completeness of 92.59%. So that it can be concluded that the learning outcomes of students after participating in IPAS learning using the Index Card Match Model Assisted by Significant QR Code Cards are complete.

Keywords

Index Card Match, IPAS Learning, QR Code



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INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere that can help students develop their potential. Through education, students are expected to have spiritual knowledge, be able to control themselves, have a good personality, be intelligent, have noble character, and have the skills needed in life. According to Sanga & Wangdra (2023:84), education is an effort that is carried out through various approaches so that students can develop actively. These developments include thinking skills, mastery of science, mental coaching, spiritual strengthening, self-control, and the development of various other skills. In

addition, education can also be interpreted as a process of learning and inheriting knowledge and skills from one generation to the next.

In line with this, Citriadin (2019:5) explained that education is an effort made with awareness by families, communities, and the government through teaching or training activities carried out at school and outside of school, both formal, non-formal, and informal and carried out throughout life to maximize human capabilities. Meanwhile, Rahman et al. (2022:2) Education is an effort that is carried out consciously and designed with careful planning to create a conducive atmosphere and learning process. Through this process, students are encouraged to actively develop their potential, so that they are able to have religious spiritual strength, self-control skills, good personality, intelligence, commendable morals, and various skills needed in community life.

In the educational process, learning is one of the important components that determine the success of achieving educational goals. Pane & Dasopang (2017:334) explained that basically learning is an activity to regulate and organize the environment so that students can learn well. Therefore, learning activities should be able to foster motivation and encourage students to be active in the learning process that takes place at school, both through interaction between teachers and students and between students themselves. Efforts to improve the intelligence and quality of students basically always rely on the quality of education provided. In Indonesia, the elementary school level has a strategic role because it serves as the main foundation for the entire learning process in further education. One of the subjects taught at the elementary school level is the subject of social studies. This science subject is designed to develop students' science literacy from an early age, while expanding their horizons into a variety of natural sciences and social sciences that are more holistic and complex.

According to Iffah et al. (2024:109) IPAS is a science that studies living things and inanimate objects in the universe, as well as the interaction of humans as individuals and social beings with their environment. Science learning at the elementary/middle school level aims to improve students' basic science literacy skills. With the integration of Natural Sciences (IPA) and Social Sciences (IPS) learning, students are expected to be able to observe natural and social phenomena simultaneously when studying the conditions of the surrounding environment. Through science learning, students are expected to be able to observe, investigate, analyze, and solve simple problems related to daily life. Thus, IPAS not only teaches theoretical concepts, but also emphasizes the importance of inquiry processes, active engagement, and deep understanding.

However, the reality is that learning social studies in elementary schools still faces various obstacles. According to research conducted by Gumilar (2023:142), IPAS tends to be less liked by students because of their scary, uninteresting, boring and difficult learning. Many teachers still use the lecture method in delivering material so that learning tends to be one-way, less varied, and does not provide space for students to actively participate. Such learning causes students to quickly feel bored, lack motivation, and have difficulty understanding

abstract material. The low interest and motivation of these students ultimately affects their learning outcomes.

Based on the results of observations made on September 20, 2025 with the homeroom teacher of grade V of SD Negeri Purwodadi. During the IPAS learning process, data was obtained on the learning outcomes of IPAS knowing that the KKTP for IPAS subjects was 68. However, the achievement of student learning outcomes shows that the understanding of the concept of social studies is not optimal. Of the total 27 students, only 11 or 40.74% of students were able to achieve KKTP, while the other 16 students did not reach the standard of completeness with a percentage of 59.26%. The teacher also explained that the main cause of the low learning outcomes of some students is because students are not used to the varied problems, lack of practice in doing the questions given by the teacher, especially the IPAS material in understanding concepts, and connecting them to real situations. On the other hand, the learning strategies used by teachers so far have not been able to fully respond to the diverse learning needs of students. The teacher admitted that the learning media used is still simple such as textbooks, oral explanations or using lecture methods, and pictures, so that they are not fully able to improve students' understanding of concepts.

The findings were corroborated by interviews with students. Most students say that they usually learn using books, pictures, or videos. Students revealed that learning often feels less interesting if they only focus on books and teachers' explanations. Some students admitted that they quickly felt bored if the material was delivered in a monotonous manner so that students were less active in learning. Students convey that they need an attractive, interactive, and easy-to-understand media display. Therefore, the use of more interactive learning media is needed. One alternative that can be used is the use of QR Codes that are connected to learning videos, so that students can access the material in a more interesting way and help them understand concepts better.

Based on the problems that have been presented, it is shown that efforts to improve the quality of IPAS learning at SD Negeri Purwodadi need to be focused on the use of models and media that can increase student interaction, motivation, and understanding. One of the solutions that can be implemented is the Index Card Match Learning Model. According to Zahwa & Erwin (2022:7505), the Index Card Match Learning Model is a learning model applied to assess students' knowledge and abilities through the method of matching cards that function as questions or answers to the topic being discussed. Through these activities, students can learn actively, work together, and discuss in this model able to create a fun learning atmosphere while strengthening student understanding.

Based on research conducted by Annisa & Marlina (2019:1053), the activities and learning outcomes of students in elementary schools who apply the Index Card Match Learning Model are better than the activities and learning outcomes of students who use conventional learning. Because learning using the Index Card Match Learning Model allows students to collaborate and respect each other between group members, and students will be more enthusiastic about learning. According to Hidayah & Puspaningrum (2025:1030) the

Index Card Match model has proven to be successful because it can encourage active student participation, create an encouraging learning atmosphere, and also develop social skills through collaboration and interaction among students

According to Apriyanti et al. (2021:130) through the Index Card Match Model, the learning process can go well, especially because this method can encourage students to be more active and practice cooperation in groups, increase courage in expressing opinions and responses, so that students can gain more knowledge that they did not know before and be motivated to continue to be active in expressing opinions without shame. According to (Friani & Puspaningrum, 2025). Through the use of QR Codes, students can be actively involved in learning activities through multimedia-based observation and digital delivery of learning outcomes. In addition to facilitating access to information, QR Code also supports differentiated learning because students can learn according to their respective learning speeds and styles, so that students not only listen to the teacher's explanations but participate directly in the learning process.

Based on these various findings, ranging from uneven student learning outcomes, limited learning media, low learning motivation, to students' need for interesting media, it is necessary to implement a learning model that is able to provide an active and memorable learning experience. Thus, the implementation of the QR Code-Assisted Index Card Match Learning Model is a relevant and potential solution to improve the quality of social studies learning in grade V of SD Negeri Purwodadi.

Based on the problems described above, the researcher is interested in conducting a research entitled "The Application of the QR Code-Assisted Index Card Match Learning Model in Science Learning Class V SD Negeri Purwodadi. Based on the formulation of the problem above, the purpose of this study is "to determine the completeness of the learning outcomes of IPAS students in grade V of SD Negeri Purwodadi after the implementation of the QR Code Assisted Index Card Match Learning Model." The results of this study are expected to be able to provide data on student learning achievements in social studies subjects through the application of the QR Code-Assisted Index Card Match Learning Model in Class V Science Learning at Purwodadi State Elementary School.

METHODS

This research method uses a quantitative approach with Pre-experimental *design techniques*. The use of quantitative methods was chosen to determine the effect of the Application of the QR Code Assisted Index Card Match *Learning* Model on the Social Science Learning of Grade V Students of SD Negeri Purwodadi.

The research design is presented in the form of a table as follows:

Table 1. Research Design

<i>Pre-test</i>	<i>Treatment</i>	<i>Post-test</i>
O1	X	O2

Source, Jakni, (2016:70)

Description:

O1 = *Pre-test* before treatment

X = Application of *QR Code-Assisted Index Card Match Learning Model*

O2 = *Post-test* results after treatment

The research population is all grade V students of SD Negeri Purwodadi for the 2025/2026 school year. The sampling technique applied in this study is saturated sampling, which is a sample determination technique by involving all members of the population as a research sample. This technique is used because the population is relatively small, i.e. only one class consists of 27 students. The data collection techniques applied in this study are tests and documentation. In accordance with the design of this study, the data analysis techniques used in this study are Determining Average Values and Standard Deviations; Normality of the data; Hypothesis Testing; and Statistical Hypothesis.

RESULTS AND DISCUSSION

This research was carried out in 4 meetings, with details of 1 meeting for the initial pre-test ability test, 2 meetings for the learning process and 1 meeting at the end of the post-test. In this study, the researcher chose the Qr Code Assisted Index Card Match Model with the aim of seeing the learning outcomes of IPAS students in grade V of SD Negeri Purwodadi. Before conducting the research, the researcher conducted a test of the question instrument in grade VI of SD Negeri Purwodadi on April 10, 2026 with the aim of finding out the quality of each question item that will be used by the researcher. The trial that will be carried out is that students are given 20 multiple-choice questions, namely 20 students who will carry out instrument trials, after the instrument trial is carried out then data is obtained stating that the valid questions are 16 questions. So, the 16 questions that the researcher will use to carry out the research as a pre-test and post-test. Before the learning process is carried out, students are first given an initial pre-test on April 24, 2026 with material on the human respiratory system and human respiratory health to find out the students' science learning results.

Based on the analysis of pre-test data, the average student score was 45.74 while the analysis of the data of the post-test results showed that the average student score was 77.63, so it can be said that the average score of the student GPAS was significantly complete. The results of the calculation of the normality test of pre-test and post-test data show that the value χ^2 is calculated $< \chi^2$ tables so that the data is distributed normally. Then to test the hypothesis, the z-test formula is used, it is known that the value of $Z_{hitung} \geq Z_{tabel}$ then H_0 accepted and H_a rejected.

During the pre-test, there were still many mistakes made by students in answering questions. This is because students who do not understand the material contained in the questions, students seem confused and anxious because they think that on that day there will be a surprise exam even though they have not studied, the researcher tries to calm the students and explain that they are doing research at school, and the questions that will be given are not exam questions as they imagined, then students work on 16 pre-test questions. After the pre-

test was carried out, grade V students participated in learning activities using the QR Code Assisted Index Card Match Model.

Based on the results of the research conducted by the researcher, the learning outcomes of students after participating in learning activities with the QR Code Assisted Index Card Match Model are better than before participating in learning activities using the QR Code Assisted Index Card Match Learning Model. This shows the results of the research using the QR Code Assisted Index Card Match Learning Model with students can learn actively and improve student learning outcomes.

In learning activities in the QR Code Assisted Index Card Match Learning Model class, it faces various obstacles because researchers and students need a long time and adjustments to adapt in the learning process. The first learning meeting which was held on April 27, 2026 carried out a learning process about the human respiratory system referring to the plan contained in the teaching module that had been prepared beforehand, the researcher invited students to ice break the opening of the class to increase their enthusiasm and focus in learning, then the researcher showed the learning material through a projector as a reinforcement of the initial concept before the Index Card Match activity begins. Then students are given 1 card either in the form of a question card or an answer card and then students are asked to find a partner of the card. When the students have found their respective partners, the researcher asks the students to sit next to each other, each student discusses the cards they get to share knowledge about the questions and answers from each card he gets, then the researcher asks each pair to read the questions and answers in front of the class, the answers are scanned and the results of the answers are displayed through a projector, researchers and students jointly evaluate the suitability of the answers. The researcher provides reinforcement and clarification if there is an incorrect answer.

In the learning process, students still seem to be less active when conducting experiments. When students are looking for a pair of cards, some students still have difficulty understanding how to find a pair of cards, so the classroom atmosphere becomes uncondusive, to overcome this, researchers come and guide and help students who have difficulty finding a partner. After students finished looking for their partners, the researchers called each pair of groups to come forward and present the questions and answers they got. At first, the group partner was not confident to explain the card he got oeh, so the researcher accompanied the students to help a little to be brave and confident and read aloud to other friends and the answers were scanned and scanned on the projector screen where there was a discussion on the answer to be discussed together.

At the 2nd meeting on April 28, 2026, before entering the next material, the researcher informed the material to be studied. In the core activity, the researcher began by explaining material on human respiratory health. Then the researcher screened the material using a projector. Furthermore, students are asked to listen and pay attention to the researcher explaining the rules and steps of the Index Card Match model with the help of QR Code Cards, to each student take turns to go forward to take the cards that have been provided by the

researcher, before looking for their respective partners, the researcher asks them to understand in advance the meaning of the task given, students collectively look for a partner either in the form of questions or answers from the cards that he got. The researcher went around to see the students' work and helped students who had difficulty in finding each partner, after getting a partner, each group sat close to each other then read the results of the answers in front of the class and assisted by scans that were scanned into the projector screen. At the end of the learning process, the researcher asks the students a question and gives them the opportunity to answer the question.

In this second meeting, it can be concluded that the majority of students have started to actively ask and answer the questions asked, students begin to be involved in their learning thus reducing the boredom of the monotonous process that focuses only on the teacher, so that students become more courageous to give responses in discussions and answer the assignments given. Students no longer feel embarrassed to express their opinions. After the researcher completes the learning activities, namely 2 meetings, then a post-test will be held on April 29, 2026 in class V of SD Negeri Purwodadi. Post-tests are given to students to find out the learning outcomes of students after learning activities are carried out. Post-tests are used to measure or find out student learning outcomes after the QR Code Assisted Index Card Match Learning Model is applied. After completing the post-test, the results were then examined and the data that had been collected was calculated. Based on the data that had been collected, the researcher found that the students' response was very satisfactory even though there were still some students who had not given a good answer, but in general the students were able and able to understand the purpose of giving the question. In terms of implementation, this researcher found that the QR Code Assisted Index Card Match Learning Model is a Learning Model that is one of the alternative solutions for the use of Learning Models that are suitable to be applied to make students brave and active in the learning process.

Based on the description that has been discussed, thus the average learning outcomes of IPAS students in grade V of SD Negeri Purwodadi after the implementation of the Index Card Match Learning Model are significantly complete. This is in line with the results of Amaliah et al.'s (2025) research on the application of the Index Card Match Type Cooperative Model with QR Code Cards to Increase the Learning Motivation of Students in Social Studies Subjects Class V UPTD SD Negeri 12 Parepare. The results of the research from the researcher were the initial pre-test test showing that from 27 students, who completed classically as many as 1 student or 3.70% with an average score of 45.74 and in the post-test test an average score of 77.63 was obtained and the students who completed became 25 students with learning completeness (92.59%). The results of the z-test analysis found that the value of $Z_{cal} \geq Z_{tabel}$ was Z_{tabel} , namely $Z_{cal} = 5.50$ and $Z_{tabel} = 1.64$, so H_a was accepted and H_0 was rejected. This shows that by applying the QR Code Assisted Card Match Index Learning Model, students are able to master the material well so that they can increase the completeness of student learning outcomes in science subjects.

CONCLUSION

Based on the results of the study, the average score in the pre-test was 45.74 increased to 77.63 in the post-test where the result increased by 31.89. Meanwhile, in the calculation of the z-test analysis results, it is known that the value of $Z_{hitung} > Z_{tabel}$, namely $Z_{hitung} = 5.50$ and $Z_{tabel} = 1.64$, is H_a accepted and H_0 rejected. So, it can be concluded that the learning outcomes of IPAS students in grade V of SD Negeri Purwodadi after the implementation of the QR Code Assisted Index Card Match Learning Model are significant. The average score is 77.63 and the percentage of students who complete is 92.59%.

In connection with the results that have been achieved and the obstacles that have been encountered in this study, the researcher suggests that for future researchers, it is better to use the QR Code Assisted Index Card Match Learning Model in the research so that students are used to conducting group discussions to practice better interaction and cooperation.

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