

## Teacher Problems in the Application of Scientific Approach to Learning during the Covid-19 Pandemic in Elementary School

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**Abstract:** The aims of this research are to analyze the problems experienced by teachers and create solutions or innovations that teachers can do in the application of scientific approaches to learning during the covid-19 pandemic in elementary schools. The research uses qualitative research methods, observation data collection techniques, interviews, and documentation. Teachers problems in the application of scientific approach to learning during the covid-19 pandemic, including: (1) based on limited time and facilities: difficulty conditioning students' time in the 5M scientific-based learning process and supervising the student's learning process directly, difficulty detecting students' understanding of the material and honesty of students in performing tasks; (2) based on limited time and cost: using lecture methods, lacking scientifically based learning variations, lack of contextual learning experience; (3) based on human resources: difficulty analyzing values and making improvements to further learning. Solutions include: (1) cooperating with principals and peers; (2) establish relationships with parents and students through school associations; (2) improving teacher competence through training in order to be more innovative and creative; (3) apply scientifically with the program "guling" teachers around in study groups with health protocols to provide contextual learning experience; (4) create contextual scientific-based LKS with local wisdom media; (5) the collection of assignments once a week by parents to school is then corrected, rated and feedback by the teacher. Scientific contextual activities during the pandemic with the program "guling" teachers around in study groups and scientific-based LKS local wisdom media.

**Keywords:** Elementary School, Scientific Approach, Teacher Problem

### Introduction

Implementation of the 2013 curriculum is identical to the scientific approach to learning. In accordance with Permendikbud Number 103 of 2014 which requires the use of a scientific approach in the 2013 curriculum learning process and is expected to be able to provide opportunities for students to actively explore their own knowledge. In line with this, Hasanah et al. (2020), with the application of the scientific approach, it is hoped that students can be more active in participating in learning so that learning becomes more meaningful. Hamidah (2015) also states that scientific learning is a learning process in which students actively find meaning through the stages of a scientific approach.

Scientific Approach trusted as a golden step for the development and development of students' attitudes, skills and knowledge through five scientific learning experiences, namely: observing, asking questions, gathering information or experiments, associating or processing information, and communicating. (Kemdikbud, 2013; Kemdikbud (2014); Yuniarti; 2014, Budiyanto et al., 2016; Ariyana et al., 2019). The learning models recommended in the scientific approach are problem-based, discovery-based, and project-based learning models. (Kemdikbud, 2013; Kemdikbud (2014); Ariyana et al., 2019).

Through the scientific approach, it is expected that students have character and high-level thinking skills so that they are able to solve problems systematically (Kemdikbud, 2013). The characteristics of learning with a student-centered scientific approach that involve process skills, shape student character, and stimulate the development of students' higher order thinking skills (Hosnan, 2014). The implementation of the scientific approach according to the 2013 curriculum can familiarize students with high-level thinking, attitude, and work using scientific principles and steps so that the learning process becomes more important than the final result (Musfiqon & Nurdyansyah, 2015; Budiyanto et al., 2016).

Teacher problems in the application of science which basically emphasize process skills include: students are less active, students are accustomed to getting knowledge from teacher explanations, limited time, students have difficulty using practicum tools, students have difficulty drawing conclusions from an experimental activity or scientific activity (W.ardani & Budiharti, 2014; Sani, 2014). Scientific application also sometimes does not emphasize the student's learning experience in the real learning process with the surrounding environment, so that learning is only contextual in terms of material content according to the teaching material book and does not provide contextual experiences to students. Kadir (2013) Contextual learning with a scientific approach is usually the choice of teachers to teach students.

The scientific approach will be even more difficult to apply optimally to the learning process, this happens because of the covid-19 that entered Indonesia in early 2020 and has a very influential on the world of education. Setiawan (2020) explained that covid-19 is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), namely the acute respiratory syndrome coronavirus 2.

The Covid-19 pandemic has hit all countries in the world, to prevent transmission and spread, the government has imposed PSBB (Large-Scale Social Restrictions) regulations in various parts of Indonesia. Setyaningsih (2020) argues that government policies regarding PSBB have an impact on school closures, so students must learn from home. To prevent the spread and transmission of the covid-19 virus, the Ministry of Education and Culture issued a Circular of the Minister of National Education Number 4 of 2020 concerning Implementation of Education Policies in an Emergency Period for the Spread of Covid-19 on March 24, 2020 "Health and safety of students, educators, education personnel, families, and the community is the top priority in determining the learning policy". The policy in question is the process of learning from home through distance learning (PJJ). This policy applies to all levels of public and private education, from preschool to public and private universities. Latip (2020) explains that almost all countries affected by Covid-19 impose distance learning (PJJ) or home learning policies for all schools and colleges that cannot carry out direct or face-to-face learning.

Setiawan (2020) Distance learning (PJJ) is learning where students and teachers are not always physically present at school. Anugrahana (2020) explains that elementary schools, one of the levels of education that have felt the impact of the Covid-19 pandemic, are starting to change face-to-face learning into online distance learning (PJJ).

Learning from home or distance learning that is applied in elementary schools, of course, experiences various problems. Basar (2021) obstacles and challenges in implementing distance learning include: lack of readiness of human resources (teachers, students, and parental support), unclear local government directives, no precise curriculum, and limited facilities and infrastructure. inadequate internet technology and network. Indrayana & Sadikin (2020) the ability of human

resources in distance learning, especially teachers as teachers and educators, will experience difficulties in preparing teaching materials, learning media, and supervision. Students with online learning patterns, piling up study assignments, students feel bored and bored so that learning motivation decreases.

Based on the results of observations of preliminary studies in early March 2021, the application of the scientific approach to learning at SDN 02 Alastuwo Kebakkramat Karanganyar is still experiencing problems or obstacles. This is reinforced by the results of interviews with the principal who stated that the application of science in distance learning during the Covid-19 pandemic which has been going on for more than a year in Indonesia (March 2020 to now) is not ideal, teachers are still experiencing problems due to various factors. including: facilities and infrastructure, human resources (teachers as educators, students, parents), time, and funding.

The problems experienced by teachers in the application of science in the learning process during the Covid-19 pandemic certainly affect the process and student learning outcomes, the stages of the scientific approach (observing, asking, trying, reasoning, communicating) cannot be implemented optimally by both teachers and students. Therefore, creative and innovative solutions are needed to overcome the problems of applying a scientific approach to learning during the Covid-19 pandemic.

Several previous studies that are relevant to the problematics of scientific application and their solutions include: (1) Muliatina (2016) wrote down the constraints of teachers in applying the scientific approach to the 2013 curriculum in elementary schools; (2) Haq & Murdiono (2019) write down the problems of teachers in applying the scientific approach to PPKn learning in junior high schools; (3) Budiyanto et al. (2019) wrote about the implementation of a scientific approach in learning in basic education in Malang; (4) Rita et al. (2016) wrote about the difficulties of teachers in applying the scientific approach to the 2013 curriculum in the case of high school sociology teachers (5) Rahmaini (2020) wrote a contextual learning strategy for the Covid-19 period based on a scientific approach for elementary school aged children;

Research Muliatina (2019), Haq & Murdiono (2019), Budiyanto et al. (2019), Rita et al. (2016) discussed the problems of applying a scientific approach in the classroom but not during a pandemic. Meanwhile, Rahmaini (2020), Setiawan (2020), and Indrayana & Sadikin (2020) discuss solutions to learning problems during the pandemic using a scientific approach. Based on this background, not many have researched the problems of teachers in applying the scientific approach to learning during the Covid-19 pandemic, so this research was conducted to analyze the problems experienced by teachers and to create solutions or innovations that teachers could do in applying the scientific approach to future learning. Covid-19 Pandemic in Primary Schools.

## **Method**

In this study using qualitative research methods. According toutama (2019) qualitative research is a qualitative method because the data collected and analysis is more of a holistic (comprehensive) description, namely a detailed description of everything that occurs in certain activities or situations. Researchers only focus on describing the problems of grade V teachers and innovative solutions to overcome problems in applying a scientific approach to learning during the Covid-19 pandemic at SDN 02 Alastuwo Kebakkramat Karanganyar. This research activity was carried out from the preliminary study and initial observation in March 2021 until the end of March 2021.

Qualitative research emphasizes the meaning of focusing more on qualitative data (primary and secondary). Primary data is data that comes directly from the researcher. Secondary data is data obtained by researchers from existing sources (Sutama, 2019). Primary data obtained by researchers by conducting interviews directly with class V teachers of SDN 02 Alastuwo. In addition, researchers also directly observed the process of applying science to learning during the Covid-19 pandemic. Secondary data in this study are in the form of documents including: curriculum, syllabus, annual programs, semester programs, lesson plans, daily journals, test or evaluation results, assessment sheets, and photos or pictures that are useful for obtaining data as well as being complementary and evidence to strengthen research.

Researchers used observational data collection techniques, interviews, and documentation in accordance with Sutama's (2019) theory of frank or disguised observation techniques, in data collection, researchers were candid to the data source that they would conduct research. In-depth interview technique is the process of obtaining information for research purposes by means of face-to-face question and answer between the interviewer and the informant, with or without using the interview guide. Documentation technique is a process of proof based on any type of source, whether written, spoken, or pictured.

Observations were made online and offline to observe the situation directly in the process of applying science to learning and the researcher conducted direct interviews with research subjects or informants, namely the fifth grade teacher of SDN 02 Alastuwo Kebakkramat Karanganyar. To obtain accurate data, researchers will also conduct interviews with other parties such as the principal, a sample of students and parents. Observations and interviews use supporting instruments in the form of stationery, smartphones, laptops, and whatshapp applications. Documentation is done to answer the formulation of problems in research in the form of documents or secondary data related to learning that is requested directly from the teacher.

The data collected were analyzed qualitatively with the Miles and Huberman model. Sutomo (2019) qualitative analysis of the Miles and Huberman model was carried out throughout the study from beginning to end, there were three pathways in qualitative data analysis, namely: data reduction, data presentation, and conclusion drawing. Test the validity of the data in this study using triangulation. Sutama (2019) Triangulation in credibility testing is defined as checking data from various sources in various ways and at various times. Researchers used two types of triangulation, namely triangulation of sources and triangulation of techniques.

## **Result and Discussion**

### **Teacher Problems in the Application of Science in Learning during the Covid-19 Pandemic**

The online distance learning process has been carried out since March 2020 as recommended by the government not to carry out face-to-face learning in schools with the aim of preventing the spread of the covid-19 virus until March 2021 this has not changed considering that the covid-19 virus still has no signs of a pandemic lost because there are still many people who are infected. Learning with a scientific approach during the Covid-19 pandemic, teachers experienced problems in various factors which were seen in direct observations when the teacher carried out the online learning process and interviewed the fifth grade teacher of SDN 02 Alastuwo, as follows:

*"I only convey scientific-based learning instructions every day via WhatsApp and sometimes parents convey it to children when I get home from work so I can't supervise students and I don't know whether students really understand the instructions, materials, and scientific-based learning evaluations that I conveyed, I also do not know whether the written assignments or practicum assignments in the form of photo or video images were actually done by students honestly or not. Parents sometimes complain that the internet network is unstable and the internet quota is limited, causing me to rely on the lecture method and find it difficult to apply a scientific approach, the material in the form of files or videos is not able to provide students with a contextual experience. Students feel bored and bored because they haven't met their friends for a long time,*

The teacher's statement was also emphasized by the following NM students:

*"I don't have my own cellphone yet and my parents work in a factory. When the teacher gave me materials and my assignments had to wait for my parents to come home from work, after a long time I was also tired of studying at home all the time "*

SR students added:

*"I have my own cellphone but my quota runs out, I can't open the learning video "*

Also supported by a statement from ZA's parents:

*"My child is often late in sending assignments because I have to work and cannot fully accompany the children to study and if I am not at home my children play and don't want to study.*

WP's parents also conveyed:

*"If the teacher provides materials or assignments in the form of videos or files, sometimes I also can't open or send assignments on time because my internet quota runs out "*

Based on observations, interviews, and documentation obtained, researchers can conclude that teachers experience problems in applying scientific approaches in learning during the covid-19 pandemic, including: (1) based on limited time factors and mobile media facilities mostly owned by parents whose daily work and students do not have their own hp cause: teachers have difficulty conditioning students or managing time in the scientific-based learning process that is identical to 5M directly in accordance with rpp that has been made , teachers are less able to supervise the student's learning process, teachers do not fully know whether students really understand the material instructions and scientific-based learning assignments that have been submitted, the teacher does not fully know whether the assignment is done honestly or not; (2) based on unstable internet network factors, limited internet quota, time, and cost both in terms of teachers, students, and parents cause: teachers rely on lecture methods and lack of scientific-based learning variations, materials in the form of files or videos are less able to provide students with contextual learning experience; (3) Based on the factors of working parents can not accompany the child to learn in full, students are also tired of learning at home not doing and sending assignments on time causing teachers difficulty analyzing grades and making further learning improvements.

The findings of researchers regarding teacher problems as described above are in line with Haq & Murdiono (2019) Teachers' problems in applying the scientific approach include: (1) limited teacher competence; (2) unequal facilities and

infrastructure; (3) time and cost limitations; (4) lack of creativity and innovation; (5) lack of enthusiasm, motivation, and curiosity of students; (6) low ability to think critically, solve problems, and make decisions; (7) lack of communication and collaboration skills; (8) low interest in reading; (9) lack of information literacy; (10) low literacy of information and communication technology (ICT); (11) limited training and outreach regarding planning, process, and learning evaluation. Muliatina (2016) the scientific approach is not perfect because some teachers are still reminded of the old approach that was used when the KTSP curriculum was still in effect. teachers at the time of teaching are often confused between the old approach and the scientific approach used today. Rita, et al (2016) that teachers in the implementation of learning are less varied in learning activities using a scientific approach so that students feel bored with the same learning activities. Rahmaini (2019) when learning from home, children prefer to play than study.

### **Solutions to Overcome Problems in Scientific Application in Learning during the Covid-19 Pandemic**

The teacher's efforts in creating problematic solutions and innovations in applying the scientific approach to learning during the pandemic are seen in the following statement:

*"The scientific approach is identical to the 5M scientific activity, in its application as a teacher I need to collaborate with colleagues, build partnerships with parents because the readiness of teachers, parents, and students is an important factor in PJJ. The scientific approach will be more meaningful for online and offline students by providing a contextual learning experience, in which students learn directly from the surrounding environment, both social and natural environments through the "rolling" program or traveling teacher. I go around in study groups based on the student's home address or the name of the student's village with health protocols and students do not need to be in uniform so that it can create interesting and fun learning, students are enthusiastic about learning at home. To save costs, not all assignments are sent online, I need to make student worksheets or scientific-based contextual worksheets using local wisdom media. so that it can create interesting and fun learning, students are enthusiastic about learning at home."*

The teacher's solution was reinforced by the following statement by the principal:

*"Following up on the problems experienced by teachers in applying the scientific approach during the pandemic, I as the principal of the school took a policy to always establish partnerships with the school committee, and parents of students by creating a school association. Schools increase training funds for teachers to improve competence, procure contextual scientific-based learning media, increase wifi power so that teachers can search for internet sources, be creative, and innovate so that they are not stuck with teacher and student teacher books in applying the scientific approach. I approved the proposal for a teacher council meeting on the "bolster" program, namely mobile teachers, allowed teachers to teach on a round-trip basis by forming learning posts, Students are grouped according to their address with peers to be able to create contextual learning based on science during the pandemic-19. To save on the quota of parents or students, and to avoid cheating on*

*assignments done by parents or older siblings, students do assignments in notebooks or scientific-based worksheets according to teacher assignments and assignments are collected once a week by parents to school on a schedule that does not collide with other classes for avoid the crowd. The assignment was corrected so that it was seen that it was the student's own writing or not then given a grade and feedback by the teacher. " students do assignments in notebooks or scientific-based worksheets according to teacher assignments and the assignments are submitted once a week by parents to school on a schedule that does not collide with other classes to avoid crowds. The assignment was corrected so that it was seen that it was the student's own writing or not then given a grade and feedback by the teacher. " students do assignments in notebooks or scientific-based worksheets according to teacher assignments and the assignments are submitted once a week by parents to school on a schedule that does not collide with other classes to avoid crowds. The assignment was corrected so that it was seen that it was the student's own writing or not then given a grade and feedback by the teacher. "*

Based on the results of observations, interviews, and documentation, it can be concluded that solutions and innovations to overcome teacher problems in implementing scientific learning during the pandemic include: (1) collaborating with school principals and peers; (2) establishing partnerships with school committees and parents of students through school associations; (3) increasing teacher competence through workshops or training so that teachers can innovate more in making media and varied in scientific application activities; (4) applying science with the "guling" program the teacher goes around the study group according to the student's residential address while still applying health protocols to provide a contextual learning experience; (5) making student worksheets or worksheets based on contextual science using local wisdom media;

The results of the researcher's findings regarding solutions to overcome problems as described above are in line with Haq & Murdiono (2019). The solutions made by teachers to overcome obstacles in the application of a scientific approach in learning, include: (1) attending seminars, training, and MGMP activities; (2) collaborating with school principals, curriculum staff, and peers; and (3) build a partnership relationship between teachers and guardians of students. Budiyanto et al. (2019) requires teacher understanding and creativity in the application of a scientific approach, teachers must always try and innovate to find the right strategies, methods, models and instructors in learning, creating pleasant learning situations. Rita, et al (2016) to overcome difficulties in the implementation of the scientific approach to the 2013 curriculum, it is better if you attend more workshops or lesson studies that discuss teaching methods and learning activities referred to in the 2013 curriculum. Muliatina (2016) is expected to teach teachers to apply a positive approach with good and can also minimize the obstacles faced by exchanging knowledge with other fellow teachers. Rahmaini (2019) contextual learning with a scientific approach is considered appropriate in the Covid-19 era, based on the belief that students will more easily understand every aspect of the material presented. LKS is prepared based on the core stages of the scientific approach and scientific literacy indicators. Setiawan (2020) in guiding distance learning using LKS.

The findings of researchers on solutions to teacher problems in the application of scientific approaches during the covid-19 pandemic that are different from

previous relevant studies are: (1) rahmaini contextual learning strategy (2020) children in the research environment as neighbors come to the teacher's house, the study is now a resource person as a teacher visiting the student learning group according to the address of the student living while applying health protocols; (2) Setiawan (2020) using the topic of coronavirus disease 2019 (covid-19), researchers are now resource persons adapting the topic to the theme of learning with local wisdom media. The novelty of this study is: providing contextual learning experience to students through the program "guling" teachers around the study group according to the address of the student's residence while still applying health protocols. Students do assignments in a scientifically based notebook or LKS according to the teacher's assignment and the assignment is collected once a week by parents to the school with a schedule not bumped with other classes to avoid crowds. The assignment is corrected so that it looks like the student's own writing or not is then rated and feedback by the teacher

## **Conclusion**

Based on the results and discussion, it can be concluded that the teacher experienced problems in applying the scientific approach in learning during the Covid-19 pandemic, including: (1) based on the limited time factor and the media for mobile phones, most of the students belonged to working parents and students did not have their own cellphones. cause: the teacher has difficulty conditioning the student's time in the 5M scientific-based learning process directly according to the lesson plan, is not able to supervise the student learning process, cannot know for sure whether the student really understands the material instructions and scientific-based learning assignments that have been delivered, cannot detect whether the assignment is done by students honestly or not; (2) based on unstable internet network factors, limited internet quota, time, and costs both from the teacher, parents, and students side cause: the teacher uses the lecture method and does not make a variety of scientific-based learning, is not able to provide a contextual learning experience to students; (3) based on the factor of parents being unable to accompany children to study fully, students are bored studying at home and not doing and sending assignments on time, making it difficult for teachers to analyze grades to make improvements to further learning.

Solutions and innovations to overcome teacher problems in applying scientific learning during the Covid-19 pandemic include: (1) collaborating with school principals and peers; (2) establishing partnerships with school committees and parents of students through school associations; (3) increasing teacher competence through workshops or training so that teachers can innovate more in making media and scientific application activities more varied; (4) applying scientific program "guling" the teacher goes around the study group according to the student's address with the health protocol to provide a contextual learning experience; (5) create contextual scientific-based worksheets using local wisdom media; (6) parents' submission of assignments once a week to school is then corrected, given grades and feedback by the teacher.

The principal is expected to hold regular meetings to find out what are the problems of the teacher in applying the scientific approach during the Covid-19 pandemic, monitoring and evaluating for further improvements. Teachers must always monitor student progress during distance learning, and collaborate with parents with mobile teacher "rolling" programs and scientific-based worksheets without having to burden students and parents. Students are expected to play less and be more enthusiastic in learning with a scientific approach because it can train



students to think at higher levels. Parents are expected to facilitate and assist students during learning so that students are more enthusiastic in learning.

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