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# ANALYSIS OF IPA PRACTICUM AT THE MTs LEVEL IN REJOTANGAN TULUNGAGUNG SUB-DISTRICT

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**Abstrak:**

Core Competencies and Basic Competencies at SMP/MTs are essential curriculum components that determine learning outcomes, especially in science subjects whose contents refer to several practical activities. Practicum activities are a form of learning carried out in a specific place where students play an active role in solving problems through specific tools, materials and methods. This activity can be carried out at school in a science laboratory because it is supported by various adequate laboratory equipment and materials. There are various problems related to the implementation of science practicum, especially in several MTs in the RejotanganTulungagung District area. Some of the problems include the absence of laboratory space, practicum tools and materials, practicum manuals, practicum time that is too short, laboratory personnel and laboratory documents, and the competence of educators who are not suitable for science subjects. The solution to the problem is holding simple science practicum training for teachers, laboratory management training, and maximizing cooperative relations with universities.

**Kata Kunci**: *Science Practicum, Science Laboratory, MTs Rejotangan, Laboratory Manager*

## INTRODUCTION

Practicum is an important activity in learning Natural Sciences (IPA) at the SMP/MTs level; this activity must be carried out, especially for certain materials that usually occur in everyday life. The characteristics of science subjects also support being taught using this practicum method. Material characteristics in science subjects include living things, natural phenomena, objects, and interactions between abiotic and biotic factors that occur naturally in nature. This is supported by Trianto's statement that science is a science that studies symptoms through a series of processes known as scientific processes, which are built based on a scientific attitude. The results are realized as scientific products composed of the three most essential components in the form of concepts, principles and generally accepted theory. These characteristics and statements show that it is possible and meaningful if students can apply/do it directly or practice what things are studied in the science material(Suhermanto, S., & Anshari, 2018).

In practice, many problems arose in schools, especially at the MTs level and especially MTs in the Rejotangan District, Tulungagung Regency. Practicum implementation can be hampered if some supporting components cannot be fulfilled. This can result in failing to achieve learning outcomes, lack of student understanding, learning loss, lack of skills, and so on. Based on this, this study aims to(Mustadi, A., Zubaidah, E., & Sumardi, 2016). Describe the implementation of KI and KD in science subjects, efficient skills at MTs level in RejotanganTulungagung District, describe the quality of supporting equipment for science practicum at the MTs level in

RejotanganTulungagung District,analyze problems found in the implementation of MTs-level science practicums in RejotanganTulungagung District, and providing solutions to overcome these problems.

## METHOD

This research is qualitative research to observe and analyze phenomena in the natural environment, namely MTs in Rejotangan District, which include: MTs ArRosyidiyahSumberagung, MTs ManbaulUlumBuntaran, MTs PSM Rejotangan, and MTs Darussalam Ariyojeding(Winarni, 2021). The subjects in this study were science teachers for grades VII, VIII and IX, heads of laboratories and laboratory assistants at MTs ArRosyidiyah, MTs ManbaulUlumBuntaran, MTs PSM Rejotangan, and MTs Darussalam Ariyojeding. In qualitative research, conceptualization, categorization, and descriptions are based on "events" obtained during field activities/data collection. Therefore, it is impossible to separate data collection and data analysis activities from one another. Both coincide, and the process is cyclical and interactive, not linear. The data analysis technique used in this research is descriptive analysis to describe the actual condition of the area where the research is conducted, using the technique proposed by Miles and Huberman, which consists of data collection, data presentation and reduction, and concluding(Albi, 2018).

## RESULTS AND DISCUSSION

### Implementation of KI-KD Science Subjects, Especially Skills Practicum MTs Level in Rejotangan District, Tulungagung

The instrument for measuring the implementation of KI-KD in natural sciences refers to Permendikbud number 37 of 2018. Based on this reference, science learning in class VII at the four MTs where the research was conducted has implemented several practicum activities but not optimal. For example, MTs ArRosyidiyah, whose learning so far has prioritized using images and videos displayed via an LCD projector. This madrasah has no laboratory equipment, so it has only been able to carry out simple practicums with the equipment and materials around students. The science teacher at this madrasah is a graduate of the S1 Mathematics Department of STKIP Tulungagung who now teaches science at the madrasah and teaches in grades VII, VIII, and IX, so she needs help conveying science material, especially those with practical activities So far, simple practicums carried out in class VII are observing the concepts of temperature and heat using wax, making cell models from bread, observing stone mining activities to explain the concept of environmental pollution. The rest is learning through lectures and explanations of pictures and videos(Kulsum, U., Suhermanto, S., & Sugiono, 2021a).

Slightly different from MTs ManbaulUlumBuntaran which already has several practical tools for class VII such as rulers, scales/balances, stopwatches that can be used to learn the concept of measurement with standard units. It also has various glass tools such as measuring cups, beaker glass, and spatula/glass stirrer, which can demonstrate the concept of mixtures and single substances. The rest of the KD for class VII in madrasas is accomplished by explaining the material, giving examples and illustrating on the blackboard(Kulsum, U., Suhermanto, S., & Sugiono, 2021b). The science teacher at this madrasah is a bachelor's degree graduate from the Department of Biology Education, University of Muhammadiyah Malang, so he has no difficulty teaching Science Biology material, but has difficulty teaching Science Physics material. Specifically, the material content for Science and Chemistry is small for the MTs level, so science teachers experience little difficulty. He teaches grades VII, VIII and IX at this madrasa and also teaches grades VII and VIII at MTs Darussalam Ariyojeding.

This condition is almost the same as in MTs PSM Rejotangan. The science teacher here who teaches classes VII and VIII is a Bachelor of Chemistry graduate from Brawijaya University. He then continues his studies in Master of Chemistry Education at the State University of Malang. Meanwhile, the science teacher who teaches class IX graduates from the Bachelor of Agricultural Technology, Universitas Brawijaya. There

are three science teachers at this madrasa, and the other one just entered in 2021 who is a graduate of the S1 Chemistry Department at Maulana Malik Ibrahim University, Malang. This madrasah has implemented several practical activities, such as the concept of measurement by practising measuring objects around using a ruler, calliper, or screw micrometer, then the concept of elements and compounds using plasticine, the concept of temperature using a Celsius thermometer, the concept of pollution with a simple practicum carrying a bottle and plastic cups, solar systems using balls of various sizes. Another material is explained through lectures, giving examples, and pictures(Kasztelan, 2017).

Similar conditions also occurred at MTs Darussalam Ariyojeding. The science teacher for grades VII and VIII is the same as the science teacher at MTs ManbaulUlumBuntaran. The class IX science teacher is a graduate of the Biology Department, IKIP Budi Utomo Malang. The learning conditions for class VII here are similar to those at MTs ManmaulUlumBuntaran. Here also has some practicum equipment like there, even borrowing from each other to achieve competency skills.

Class VIII practicum skills in the four madrasas are almost identical to those in class VII. At MTs ArRosyidiyah, most of the learning is through lectures, material explanations, reading books and LKS, making concept maps, and explaining pictures and videos on the LCD Projector. The practicum carried out was very simple: the practice of moving one's limbs to achieve movement material in living things, then bringing food flavourings and food fragrances/aroma to understand material additives in food, and exhaling into the glass, to study material in the respiratory system in humans(Kulsum, U., Suhermanto, S., & Sugiono, 2021b).

At MTs ManbaulUlumBuntaran, most of the learning process uses pictures and models such as pictures and models of the digestive system, circulatory system (heart and blood vessels), excretory system (kidneys), and the properties of light. Apart from that, there is a simple practicum on bringing packaged food and drinks to learn about food additives, a practicum using henna and red dye to apply the concept of substance pressure, and a practicum on the concepts of vibration, waves, and sound using a tuning fork and pendulum. The rest is an explanation of the material through lectures, books, and LKS.

Not much different from MTs PSM Rejotangan, some simple practicums are also carried out, practice using levers I, II, and III, bringing blocks, rulers, and erasers to understand the concept of effort and simple machines, then bringing pieces of stems, roots, various forms of leaves to understand the structure of the network and its function, bring any snacks students to like to learn about additives in food, bring henna, red dye, plastic to study the pressure of substances and capillarity of plant transport tissues, bring plastic, standard forks, threads, guitar strings, to learn the concept of wave vibration, and sound, bring a mirror, lens, flashlight, laser light to study the properties of light. The rest of the learning is done by explaining the material and pictures.

Learning for class VIII at MTs Darussalam Ariyojeding is similar to that at MTs ManbaulUlum because the instructors are the same, the equipment is almost the same, and they borrow from one another.The practicum skills for class IX in the four madrasas are almost the same as those in class VII and class VIII. At MTs ArRosyidiyah, most of the learning process is deepening the material and explanations using pictures, videos, books, and worksheets. Several simple practicums are carried out, such as plant propagation by carrying flowers, static electricity using combs, hair and paper, the concept of inheritance by observing oneself and one's family, and visiting tempeh production sites to understand the application of biotechnology.

At MTs ManbaulUlumBuntaran, learning is done mainly by explaining and elaborating material and deepening material with formulas and calculations, and some do simple practices. For example, applying the concept of static electricity by bringing rulers, clothes, hair, and pieces of paper, practising using magnets to study the concept of magnetism, and making tapes to study biotechnology concepts.

It is also similar at MTs PSM Rejotangan; most of the learning is through

explaining the material and deepening the material. Some of the simple practicums are the same: observing flowers to study plant reproduction and bringing a ruler, clothes, hair, and pieces of paper to learn the concept of static electricity.

Slightly different from MTs Darussalam Ariyojeding, several simple practices are carried out to achieve KD skills in grade IX. One of them is by visiting the school ecosystem, observing hibiscus flowers, cocoa ducks, and peacock flowers to study the reproductive system in plants, bringing rulers, combs, glass, cloth, and hair, for observing static electricity, practising making tape and yoghurt for the application of biotechnology concepts. Observing the structure of clay and sandy soils to the environment to study the physical and chemical properties of the soil and the organisms that live in it. The rest of the learning process is through material explanations, pictures, and giving real examples in the environment, such as electricity, lights, fans, pedalling bicycles, fans, and making recycled products from waste. All of the above conditions align with the research of Salwa et al., who stated that judging from the condition of the laboratory rooms in high schools throughout Karo Regency, they are included in the excellent category. However, the availability of the required laboratory equipment and materials still needs to be improved, and there are also some tools and materials that the school needs.[1]

**Quality of Supporting Equipment for MTs Science Practicum in Rejotangan District, Tulungagung**

The instrument for measuring the quality of the completeness of supporting science practicum refers to the Minister of National Education Number 24 of 2007 concerning Standards of Facilities and Infrastructure at the Middle/MTs Level. In Table 4.4 above regarding Science Laboratory Rooms, the four madrasahs still need a Science laboratory room. According to the narrative of the Science Teacher at MTs ArRosyidiyah, there has been no science laboratory and laboratory equipment. So the learning process that requires practicum is carried out with simple practicums bringing equipment and materials into the environment around students. The learning process mainly involves explaining material, pictures and videos using an LCD Projector. There are also no laboratory documents(Zabir, 2018).

MTs ManbaulUlumBuntaran also does not have a particular science laboratory room belonging to MTs. So far, the laboratory room has become one with the MI laboratory room, which is indeed the same foundation, but the location is different, not in the same complex. Alternating use of the laboratory with MI, or more often before practicum, equipment is taken and brought to the MTs class. Laboratory facilities and infrastructure, in terms of furniture, still use class facilities. In terms of practicum equipment, it is almost complete, but the number needs to be improved. Compared to the standard, equipment that still needs to be owned includes metal mass, 10-kilo ohm/volt AC/DC multimeter, fixed pulley, moving pulley, simple molecular model, and genetics poster. Some of the equipment has been documented in inventory and loan documents (which should be more routinely implemented).

MTs PSM Rejotangan is the same, and they do not have a particular room for a science laboratory. Equipment is stored in the teacher's locker and the cupboard, separate places to be better organized. Some of the equipment this madrasa still needs includes tool cabinets, material cupboards, and sinks. In terms of educational equipment, it does not yet have scales, stopwatches, roller meters, measuring cups, metal mass, 10-kilo ohm AC/DC multimeter /volt, a bar magnet, tuning fork, inclined plane, dynamometer, fixed pulley, moving pulley, expansion experiment, optical experiment, simple molecule model, drawing/model of the human circulatory system, drawing/model of a human eye, drawing/model of a human ear, drawings of a human throat model, and instructions for the experiment.

At MTs Darussalam Ariyojeding, it is the same. That is, they still need to get a

[1] Hasruddin, & Salwa. (2012). Analisis Pelaksanaan Praktikum Biologi dan Permasalahannya di SMA Negeri Sekabupaten Karo. *Jurnal Tabularasa PPS Unimed*, *9*, 17–32.

particular science laboratory room. Regarding laboratory furniture, it already has a tool cabinet used to store materials. Other furniture still uses class facilities. In terms of educational equipment that is not yet owned according to standards, namely vernier callipers, metal masses, AC/DC multimeter 10-kilo ohm/volt, dynamometer, fixed pulley, moving pulley, long expansion experiment, optical experiment (only has parallel plan glass), experiment electrical circuits, simple molecular models, evaporating cups, tripods, and other equipment such as fire extinguishers (APAR), this school also has other equipment that supports practicum but is not standard, namely glass slides, glass covers for making preparations, preparations for preserving plant and animal anatomy, springs, filter paper, tools for hydrostatic pressure, test tube racks, test tubes, stirrers. Glass, clamps, giant scissors, and test tube clamps. The laboratory documents owned by this madrasa are in the form of equipment inventory documents only. This aligns with research conducted by Witma et al., which stated that some teachers still needed to prepare practicum through unique lesson plans and materials or practicum guidebooks. Regarding practicum evaluation, some teachers still need to learn the evaluation strategy for practicum activities. In addition, there are also several obstacles in the implementation of practicum activities, such as management of time allocation for practicum activities, teacher control, and the incompleteness of practicum tools and materials.

**Problems in MTs Level Natural Science Practicum in RejotanganTulungagung District**

a. Based on the results of interviews with several science teachers in the four MTs, it can be concluded that the main problems experienced by schools in conducting practicum activities are:
b. There needs to be adequate practicum tools and materials.
c. Several schools, such as MTs ManbaulUlum, have almost complete equipment, but when viewed from the practical implementation, these tools could be used more optimally.
d. There is no simple science practicum manual.
e. There are several practicum tools, but they need to be better organized. The storage is not secure, so many tools are damaged and need to be fixed, and there are no laboratory administration documents.
f. laboratory manager specifically works in the laboratory, such as the Head of the Laboratory and Laboratory Assistant. The reality on the ground is that the Science Teacher also plays the role of Head of the Laboratory and Laboratory Assistant. Of course, this is a challenging task. Besides having the main task as a teacher, one has other duties as the Head of the Laboratory and Laboratory Assistant. Often, these additional tasks need to be carried out optimally.
g. Do not yet have supplier partners who supply the needs of tools and materials for science practicum.
h. Lack of study time/learning hours, especially during this pandemic. This is also in line with the opinion of Lestari et al. that the problems with the practicum implementation are the ineffective practicum time, the absence of a laboratory assistant, an inadequate microscope, and practicum instructions using student books.
i. The competence of science teachers from different majors causes a lack of understanding to do practical work on specific topics.

This is in line with research conducted by Jamaludin et al., which states that various things cause the low percentage of practicum implementation, namely: 1) teacher intensity in participating in laboratory training is still lacking, 2) availability of practicum tools and materials is still lacking, 3) subject matter Science is dense enough so that the teacher prefers the lecture method, 4) learning objectives are challenging to achieve through practicum 5) particular time is needed for preparation before practicum is carried out, 6) practicum implementation time in face-to-face hours is always insufficient, 7) teacher's understanding of the concept and use practicum tools

are still low, 8) it is difficult for teachers to design their worksheets, 10) there are no laboratory assistants and laboratories that can help carry out physics practicum(Arikunto, S., &Pendidikan, 2013).

**Solutions to Overcome Problems**

Here are some solutions that can be done to overcome the above problems, including:

a. Re-generate enthusiasm for doing practicum using simple equipment that is in the environment around students.
b. b. Holding simple science practicum training specifically for MTs level science teachers as well as making a simple science practicum manual.
c. c. Develop a more coordinated organizational structure for science laboratories.
d. d. Conduct training on Science Laboratory Management for laboratory managers, the contents of which include:1) Compile documents for the procurement of tools and materials for science practicums sourced from practicum needs at KI-KD MTs level, 2) Designing a simple science laboratory design, 3) Prepare mitigation documents for Occupational Safety and Health (K3) while in the Science Laboratory, 4) Compile Standard Operating Procedures (SOP) for Science Laboratories, 5) Prepare documents for the management of science laboratory equipment, 6) Compile documents for science laboratory material management, 7) How to establish cooperation with suppliers/providers of laboratory equipment and materials, 8) Maximizing cooperative relations with tertiary institutions, such as conducting routine visits to science laboratories (biology, chemistry, physics) so that enthusiasm for practicum is maintained.

## CONCLUSION

Implementing KI-KD in science subjects, especially practicum skills at the MTs level in RejotanganTulungagung District, still needs to be improved. Several KD can be achieved by practicum but have yet to be implemented, The quality of the supporting equipment for the MTs level Science practicum in RejotanganTulungagung District is also classified as incomplete in terms of the type of equipment and the quantity, Problems in the science practicum at the MTs level in RejotanganTulungagung District have several factors, including the absence of laboratory space, the absence of practicum tools and materials, the absence of practicum manuals, the practicum time which is too short, the absence of laboratory personnel, and laboratory documents, and educator competencies that are not under IPA, Solutions to overcome the problem by holding simple science practicum training for teachers, laboratory management training, and maximizing cooperative relations with universities.

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