

## RE-BUILD LABORATORY CONSTRUCTION IN SOCIOLOGY LEARNING

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### Abstract

**Purpose of the study:** This study aims to reconstruct the concept of a sociology laboratory in learning sociology in high school, as a first step to developing a sociology laboratory that is integrated with sociology learning.

**Methodology:** This study uses a qualitative descriptive approach with data sources derived from informants, sociology class observations, and lesson plan analysis. While data collection techniques include interviews, observation, and document analysis. Data analysis uses a content analysis approach that seeks to combine research findings with relevant theory analysis.

**Main findings:** The results of the study indicate that the sociology laboratory in learning is an experimental attempt to apply sociological knowledge by involving students so that students have the sensitivity and concern to be critical and be able to solve social problems that occur in society. So far, the concept of developing a sociology laboratory in learning has not been developed on an ongoing basis so that the spirit of scientific sociology has not been fully understood by high school students.

**Applications of this study:** This research is useful for sociology teachers who are interested in developing sociology learning through laboratories to support the achievement of sociology learning objectives, namely students have a critical attitude and are sensitive to various social problems that occur in society.

**Novelty/Originality of this study:** The existence of a sociology laboratory in learning has not been maximally developed in high schools so this study can be used as a theoretical study of the importance of sociology laboratories in sociology learning in high schools.

**Keywords:** *Sociology Laboratory, Sociology Learning, Laboratory Construction, Sociology Class, Problem Solving, Critical Thinking.*

### INTRODUCTION

In the Syllabus of Sociology Subjects for Senior Public and Religious based High School students in Indonesia (2016) states that learning sociology not only introduces Sociology knowledge in abstract theories and memorized conceptions but rather emphasizes the dimensions of affection, or students' concern and attachment to social problems. This means that students are encouraged to apply knowledge of sociology to solve social problems. One of the best ways to educate students to have problem-solving skills is to design student-centered learning environments. [Lou, Chung, Dzan & Shih \(2012\)](#) mentioned that if schools obviously can provide direct experience to students, then this can stimulate students' learning creativity. This is in line with the results of [Messineo \(2017\)](#) which states that it is necessary to consider learning science to improve student learning outcomes in sociology classes. For this reason, a strategy is needed to increase student success. In short, [Messino \(2017\)](#) presents five ideas from learning that sociologists can use to make a positive impact on their students' experiences. These concepts are metacognition, attention, guided practice, multitasking myths, and the power of empathy.

One of the learning strategies that give students hands-on experience is learning through laboratories. As stated in the paper by [Guggenheim \(2012\)](#) explains that the existence of the science of sociology at the beginning of his discovery confirms the existence of laboratories as an important metaphor for understanding sociology. That is, the laboratory is a means of producing scientific knowledge of sociology. However, the existence of a sociology laboratory is not mentioned in the Government Regulation of the Republic of Indonesia Number 32 of 2013 concerning Amendment to Government Regulation Number 19 of 2005 concerning National Education Standards specifically the point of infrastructure standards. As stated in Article 43 that the standard diversity of types of equipment includes natural science (IPA) laboratories, language laboratories, computer laboratories, and other learning equipment in educational units. It can be concluded that the sociology laboratory is not a basic requirement for learning services in schools. For this reason, it is necessary to develop a learning strategy that utilizes the laboratory as a practical tool in applying the concept of sociology to see social phenomena in society.

### NEED OF THE STUDY AND OBJECTIVE

On the other hand, contemporary sociology studies need to develop empirical research to apply knowledge of sociology in efforts to solve social problems through social engineering methods. Therefore to educate students to have problem-solving skills is to design a student-centered learning environment through experimental activities in sociology laboratories in sociology classes. Through the application of this model, students are prepared for learning experiences

and facilitate students to experience deeper learning processes. Students are shown with ease in searching for terminology experimentally to help students understand the concept of sociology. For this reason, this study aims to construct the laboratory concept in sociology learning as an initial design for developing a laboratory in sociology learning, especially in high schools.

## LITERATURE REVIEW

The concept of a laboratory in the field of education was first introduced by John Dewey by establishing Laboratory School in 1896. John Dewey provided philosophical and psychological ideas that could be tested in practical applications. This is a necessity in the laboratory, as the inclusive scope of question-die in question demands something more than a laboratory experiment in a limited technical sense. This condition will come to the continuous development of people in knowledge, retention, and character and school in response to these needs (Mayhew & Edwards, 1936). Through laboratory schools, John Dewey wants to create a supportive and interactive learning community that encourages students' social and intellectual growth, while also providing a space where theoretical ideas can be implemented and tested in the fields of curriculum design, teaching, and learning (Jacobs, 2010).

According to Decaprio (2013), a laboratory is a place for a group of people who carry out various kinds of research, observation, training, and scientific testing activities as an approach between theory and practice. This is also emphasized by Domin (2007) that practicum activities such as expository, discovery, problem-based, and inquiry can be done in the laboratory and the field. During this time, the development of laboratories in schools is identical in natural science subjects that are easier to apply in laboratories. Trials to apply natural science knowledge in laboratories provide more real discourse because simulated artificial worlds in natural science can represent the real world.

One of the efforts developed by experts is establishing a social laboratory. According to Hassan (2014), the social laboratory is a pragmatic effort to overcome increasingly complex social situations through the development of systematic social engineering from the root of the problem to the solution offered. Furthermore, he said that this condition encouraged many emerging social laboratories and promised a revolution to overcome increasingly complex social challenges. Lake, Fernando, Eardley (2016) recommend an interdisciplinary and holistic approach in addressing sustainable social challenges such as poverty, global climate change, including access to food. Educators are asked to have better preparation for students to overcome local-based problems through effective pedagogical strategies, through laboratories. Laboratory development becomes education and innovation by involving students in participatory research on the interrelated dimensions of social sustainability. Furthermore, the strategy developed is through collaboration with community partners so that students have the opportunity to solve real problems in the community. This also relates to the development of character education. Laboratory strategies developed starting from mapping thinking to the interview stage help students develop the skills and foster good values needed to overcome high-risk social challenges.

To meet this challenge, laboratories were developed in social subjects. Garaizar and Reips (2013) stated that social science laboratories are software networks that are designed for research purposes by conducting social experiments that are manipulated to see social activities in the network (network) and see social interactions. According to Frias and Garcia (2017), social laboratories are places designed to conduct trial/ experiments so that they can be used to observe and analyze social phenomena and as a space to produce innovations in science. Thus the social science laboratory can be used as a learning resource to link theory and practice so that students can gain contextual knowledge. Just as when learning can use the community as a laboratory to link theory and practice through field experiments (Roth, 1986).

According to Rahmania Utari (2017), it is emphasized that experiments in social science laboratories, especially regarding human behavior, need to be done with specific methods because they must be set in such a way. For example, how researchers conduct interviews by asking the right questions so that information can be extracted, or at the time of the experiment the researcher sets up a situation that can map the patterns of the experimental subject behaves. Therefore, research in social science laboratories must also be supported by laboratory facilities for the research itself. It was further emphasized that the strengthening of laboratory functions could be done by intensifying laboratory facilities for research. Although social science departs from social situations, it is not impossible that experiments will be conducted in a laboratory. Furthermore, Rahmania Utari (2017: 19) emphasized that if it refers to the characteristics of social science and laboratory vision as part of knowledge management, the laboratory is interpreted not only to be a place for learning and technological innovation and the development of new theories but also results in social innovation. Therefore it is necessary to develop laboratories in schools in the field of social sciences as a contribution of social science in solving various problems in society. Laboratories in schools are defined as part of an experiment-based learning system innovation by combining theory and practice so as to increase the competence of students' knowledge, attitudes, and skills.

In the study of sociological science, the idea of carrying out experiments has been developed based on the thought of North American sociologists from the end of the 19th Century and the beginning of the 20th Century which was subsequently linked to the Chicago School of Sociology (Gross & Krohn, 2005). It was further explained that from the very beginning of the institutionalization of American sociology as a scientific discipline, sociologists had tried to make their approach more objective by trying to adopt the language and methodology of natural science. Included in this effort is a perspective where the community or city is seen as a laboratory.

[Guggenheim \(2012\)](#) developed the concept of a sociology laboratory as an uncontrolled outside and a controlled inside, hereinafter referred to as location and unilatory. Locatory is a place that allows for observation of specific objects that only exist in that place. While unilatory is a place that can only control one part of the object while others cannot be controlled. This concept was developed based on the development of sociology, especially after the emergence of qualitative sociology. From this understanding, it can be concluded that the sociology laboratory not only focuses on the context of the place that physically exists but can also be developed outside because the object of sociology is society. John Dewey mentioned that there are 3 approaches used in developing laboratories in schools, based on (1) psychological, children's natural impulses and interests, (2) social sociological attitudes and practices, (3) logically, organized content and methods ([Encyclopedia of Education Theory and Philosophy, 2014](#)). Meanwhile according to Sauer (2014), in general, the stages of laboratory development are formulating goals and hypotheses, designing an experiment, identifying case subjects, running experiments on experimental subjects, and also discuss the results.

According to [Chan \(2012\)](#) explains about learning in the laboratory is learning that takes place in a space where students can observe, practice, and experiment with objects, materials, phenomena, and ideas both individually and in groups. This learning is not limited to physical laboratory space, but can also occur in various forms of space such as e-learning management systems and virtual laboratories that are computer-simulated. The laboratory can be said to be effective if all facilities are well equipped and teachers can apply theory as practice and design a good allocation of study time.

[Klentien & Wannasade \(2016\)](#) show that learning models utilizing a developed laboratory can improve analytical thinking skills and evaluate the ability to carry out science projects for high school students. Besides, the development of learning in the laboratory can improve students' understanding of concepts which can be seen from the increased value of student learning outcomes after participating in practical activities. This is in line with the opinion of [Kirchhoff \(2013\)](#) that practicum activities can improve the mastery of concepts. The work of students can be seen from the quality of students' creativity in applying the concept of sociology to the experimental approach. While changes in student attitudes after participating in practical activities in the laboratory can be seen from the scientific attitude ([Carin and Sund, 1997](#)). Laboratory inquiry can improve students' attitudes and understanding of science and influence how well science is taught.

## METHODS

This study uses a constructivist paradigm based on social reality. The assumption in the constructivist approach states that there is no single social reality because reality itself is socially constructed ([Merriam, 2009](#)). This indicates that social reality will be influenced by the perspective of individuals who have a diversity of knowledge and experience. Sources of research data resulted from informants, observations, and document analysis. The technique of taking informants using purposive sampling with the following criteria: the informants came from sociology teachers who had at least 5 years teaching experience, came from private and public school, and had conducted project-based learning strategies. Its strategy criteria are based on the assumption that laboratory development can be implemented through learning project activities done by the teacher. The number of sociology teachers who were informed was 4 people from private and public schools. Observations were made at private and public schools to see the potential of the school so that it could develop a sociology laboratory. The purpose of the observation is to see how sociology learning is done, especially based on experiment activity. The document used in this study is the Lesson Plan of teachers and scientific articles that are relevant to the research objectives. Teacher lesson plans are analyzed to map the steps of activities that can be developed in laboratory-based sociology learning. Data collection techniques are in-depth interviews, observation, and documentation.

The steps in analyzing data use a qualitative descriptive approach with the interactive model technique of [Miles and Hubberman \(1992\)](#). First, identify specific and relevant sources of literature according to the purpose of the study. In this case, look for scientific articles using the keywords sociology laboratory. Internet sources that are referred to are science direct, sage pub, eric, and Elsevier. The results of writing that are relevant to sociology laboratory keywords are still limited. Furthermore, the results of the analysis of the document were obtained by making question instruments for in-depth interviews. The second step is reducing the data from interviews, observations, and documents, with stages, include: finding general laboratory concepts, the existence of sociology laboratories in schools, and then constructing laboratory construction in sociology learning. In the third step, the results of data reduction are interpreted and analyzed descriptively qualitatively according to the research objectives. The final step is drawing the conclusion as a result of research by reformulating the concept of the laboratory in learning sociology.

## RESULTS

Learning through the laboratory supports active students and finds knowledge directly so that the concept of learning by doing proposed by John Dewey can occur. In laboratory learning, students can determine the problem to be tested, collect data, to find the results that encourage innovation learning, and attract students' learning interest. In the laboratory, students will find many learning media that are useful in providing contextual understanding related to learning material. This is in line with [Mateer \(2011\)](#) which states that the ideal learning media can describe complex ideas in a short amount of time, which helps students connect theories learned in class with real-world events. However, based on observations it shows that the sociology laboratory in high school is practically not found.

Retno: "As far as I know in many state high schools there is no sociology laboratory yet, even though subjects in the laboratory of the social sciences such as the history and geography laboratories are in high school".

Bagus: "In my school, there was no sociology laboratory-developed because of limited infrastructure, human resources, and many teacher activities".

As for the obstacles in learning in the social science laboratory, if it relates to methodology is a matter of validity. The 'real world' does not provide clear criteria for representation research, and that many experiments and simulation games do not have to represent 'the real world' directly. Real-world simulations in the laboratory can be done by adapting the validity procedures to the existing conditions.

During this time sociology learning is carried out using a cooperative learning approach that focuses on activities in sociology classes. However, some sociology teachers have tried to do project-based learning by combining activities inside and outside the classroom. Outside classroom activities are carried out excluded from effective class hours as students are asked to observe community activities in places of worship, which are then made reports to present. This situation illustrates that the sociology learning undertaken has tried to do a contextual-based learning approach that exists in the community. This condition shows that the development of sociology laboratories in schools can be done with the right strategies and concepts.

Arista: "Once, I applied a project-based learning concept that asked students to observe individual behavior in places of worship. This task is related to diversity in a multicultural society".

For this reason, through the laboratory, learning becomes more varied and interesting because it requires students to gain direct experience in finding and applying learning material. Besides, the learning process in the laboratory can develop student character because there are values of collaboration, responsibility, independence, and creativity. In its development, the laboratory is not solely intended for natural sciences but also develops in the study of social sciences. The emergence of social laboratories in the community shows that the needs of social laboratories in schools also need to be developed. The existence of social laboratories is used to answer a variety of social problems in an increasingly complex society. Various social challenges that continue to be sustainable require a solution so that social laboratories are developed. In schools, social science laboratories become miniaturized social problems in society by utilizing technology such as online news, images, and videos.

This indicates that sociology as science requires an experimental approach in studying the resulting knowledge. The existence of sociology as a pure and applied science is an important factor in developing sociology learning through laboratories. Sociology as a dual paradigm science provides the development of diverse and subjective perspectives so that it requires a certain experimental approach so that in seeing problems in society it can be appropriate to use the concept of sociology. The application of sociology knowledge encourages students to better understand the state of society, to be more sensitive and caring so that they do not see society on one side but in a variety of perspectives. To increase students' sensitivity and concern for various social problems, the answer lies in the development of sociology laboratories in schools.

The existence of sociology laboratories in schools becomes a constructive discourse because it can support more meaningful and interactive learning so that it impacts on the quality of sociology learning. This situation can be described in compiling learning designs that refer to practical activities and experiments in accordance with the spirit of the science of sociology at the beginning of its discovery. Besides, various social problems that arise in the community become a challenge for sociology teachers to get involved in providing ideas and ideas through learning in schools. Involving students in learning in the sociology laboratory as a first step in educating students' character in seeing changes and social problems that exist. Furthermore, laboratory construction in learning sociology can be seen in Figure 1.

## CONCLUSION

In sociology learning, laboratories can be in the form of community, market, village, government, or public activities. In sociology laboratories, learning can occur in many ways, often through observing a case or phenomenon, conducting hands-on practical training, or conducting experiments. The main purpose of organizing laboratory learning for students is to develop student competence in applying sociological concepts to see various social problems in society. Sociology laboratory learning provides opportunities for students to connect and strengthen the theoretical concepts taught in class. It also targets a variety of learning outcomes including learning experiences in seeing people's world clearer and more real even in the prototype concept.

Laboratory-based learning gives students to access that they have never had before to achieve learning competency. For this reason, in developing a sociology laboratory, teachers need to think to take the material students must learn and ask them to apply it, using technology, to think critically and then apply that thought to real-world situations. Furthermore, in developing a sociology subject matter, the teacher can create a theme in accordance with the subject matter and can then allow students to choose a topic or go through the drawing process. This learning concept can be planned in a learning plan that has been prepared by the teacher in one semester of learning. This means that practicum activities in



the laboratory must be integrated into learning activities into a systematic and holistic unit so that the indicators of competency achievement include affective, cognitive, and psychomotor.

To arrange sociology learning through laboratories, teachers are required to be creative in utilizing the existing media, facilities, tools, and facilities. If it is possible to be able to utilize the surrounding environment because more real sociology laboratories exist within the community.

Scientifically can be described laboratory construction in learning sociology begins with the concept of John Dewey which states that laboratories in schools provide a new color in learning strategies. Through the laboratory, it can create a meaningful and interactive learning community that encourages students' intellectual growth that can be tested through a single learning design. Referring to the beginning of the development of sociology in the world, an experimental approach is needed in producing knowledge of sociology as well as efforts to implement it. From here the sociology laboratory is needed in learning as part of teaching strategies to apply sociological knowledge in analyzing social problems in society. This idea is in line with the development of a growing social laboratory to respond to social challenges in an increasingly complex society. For this reason, laboratory construction in learning sociology is an effort to apply sociological knowledge in analyzing social problems in accordance with sociology subject matter so as to increase students' sensitivity and concern in being critical and able to solve social problems. This must be done by teachers in practicum activities in school laboratories. Teacher and student collaboration in learning in the laboratory is required to make practical activities more interesting and enjoyable so that they can successfully carry out experiments. Therefore, effective, efficient, and safe laboratory learning needs to be formulated, known, and understood by all laboratory users in this case teachers and students.

The existence of laboratories is needed in learning sociology as demands from increasingly complex societal developments. Various social challenges in the community encourage students to have sensitivity and concern for the sustainability of various social problems. For this reason, teachers must be able to develop sociology laboratories in learning so as to provide new discourse in analyzing social conditions and situations in society. The laboratory in learning sociology was developed as a pragmatic effort to analyze various social problems with a sociological approach so as to make students think critically and problem-solving. Pedagogical approach in answering various social problems in society as part of the learning by doing the process. This constructs an understanding that experimental activities as part of learning sociology in schools such as the sociological approach at the beginning of its discovery. Sociology laboratory in schools as a constructive discourse to support meaningful and interactive learning because it can encourage teachers to design lesson plans that refer to practical activities. This is a step involving sociology teachers and students in giving ideas to find solutions to social problems so that it can be the first step in educating students' character in seeing the social changes.

### LIMITATIONS AND STUDY FORWARD

This study is still limited to providing concepts about the sociology laboratory in learning. During this time, the existence of laboratories in schools is dominated by natural sciences so it needs the development of laboratory concepts in sociology classes. This is also supported by the needs of students to be able to apply the concept of sociology in everyday life in society. However, sociology learning through laboratories is still rarely done so to implement it requires the support of teachers and related policymakers. This paper continues to develop laboratory designs for learning sociology.

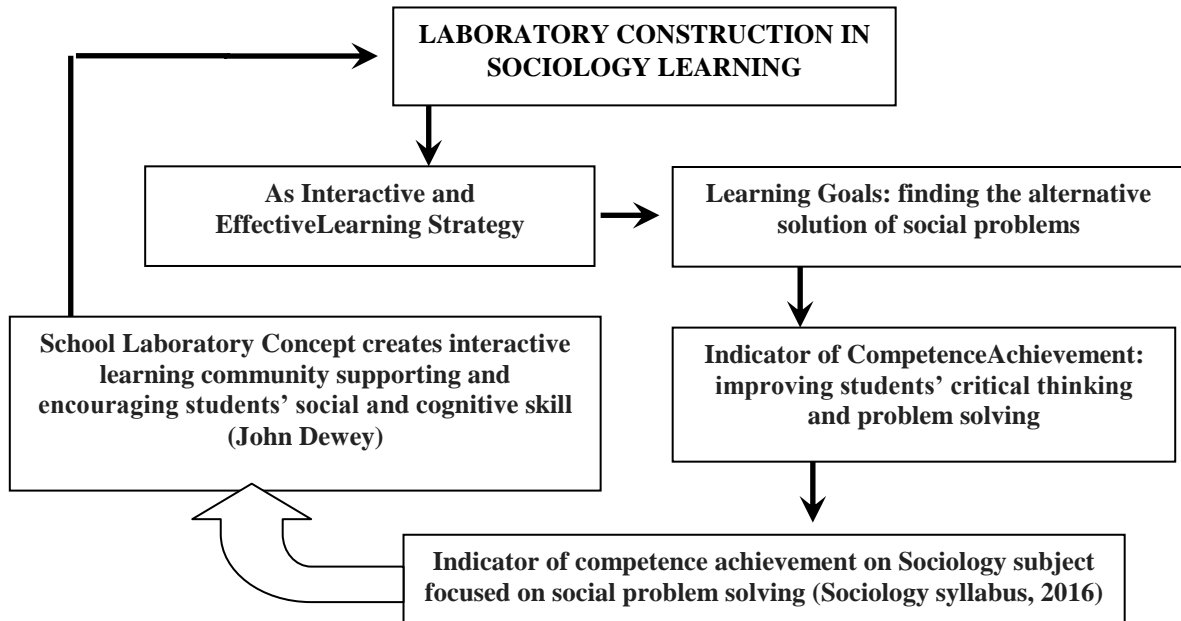
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**Figure 1:** Laboratory Construction in Sociology Learning

**Source:** (Research Data Process, 2019)