

Research Based Learning Design: Teacher and Lecturer Perception Analysis

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ABSTRACT

The purpose of this study is to explore and describe the teacher's perceptions of how research-based learning is. The research approach used is a qualitative research approach, a qualitative approach is used to obtain detailed and in-depth information about research-based learning in terms of teacher perceptions. The research subjects were 110 teachers / practitioners in the South Sumatra region. The data collection technique uses an open questionnaire via goggle form. The results showed that teachers had the same opinion about the meaning and importance of research-based learning (95.5%). There were still teachers who did not agree with research-based learning (0.5%). There are differences in the problems presented in the orientation, the difference is dominant to see the problem from the field data it is better to use (63.40%), while 36.60% agree if the problem comes from a literature review. In addition, there is a lot of content that can be presented in the context of field data, including biochemistry (10.5%), current issues, qualitative data (15%), and field survey content (16%), while literature review is dominated by current issues (85 %) the remaining 15% is another factor. Although the teacher views research-based learning as important, in their perception it is difficult to do this because of the teacher's ability to have no experience in research and the time factor for carrying out the learning.

Keywords: *Research-based learning, The teacher perceptions, Lecturer perception, Analysis.*

1. INTRODUCTION

The professionalism of teachers and lecturers in the 4.0 industrial revolution area must have the ability to develop knowledge, as well as their ability to carry out interesting and meaningful learning for students. The attractiveness of learning activities can be seen from the aspects of learning activities and how to teach them. Therefore, the professional demands of teachers and lecturers are to make learning interesting, easy to understand, and meaningful. Learning activities that are authentic problem solving with the point of view of problem formulation, problem solving, and communicating research are conducting Research-Based Learning [1]. Research-based learning is authentic problem-solving learning that focuses on problems, solving problems, and communicating research results.

This can improve the quality of learning. Research-based learning is a method of cooperative learning, problem-solving, authentic learning, contextual and constructivist inquiry discovery approaches [2]. Suchada Poonpan [3] states that students should be able to build new knowledge from research procedures. Research-based learning (PBR) is a student-centered learning (SCL) method that integrates research into the learning process [4]. The learning process in each educational unit must be inspiring; The key is how the learning process is more contextual and scientific to form the character of students who are scientist (scientist). The research-based learning approach is a learning approach that is contextual and scientific and can improve learning outcomes [5].

Research-based learning is one of the learning models developed by constructivism, which is then responded positively by progressive educators who have stimulated extraordinary learning dynamics [6]. Research-based learning is effective in improving the learning process [7], while Rangkuti [8] shows that research-based learning can contribute to the growth of student skills in conducting research. Meanwhile [9] suggested that research-based learning could improve student skills in educational research. Especially for student centered learning, it is usually less effective; there is even evidence of negative results when students acquire incorrect understanding, or incomplete or irregular knowledge of it [10].

The results of observations of the teaching methods of some teachers showed that most of them still used the traditional way, namely by explaining theory, giving examples and giving exercises. This causes student achievement to be not optimal. Such teaching methods are not appropriate for improving problem-solving abilities, because students become less creative and they tend to imitate teachers. Therefore, a more effective learning approach is needed to improve their problem-solving skills. In accordance with the expert opinion above, a research-based learning approach is the solution.

The results of interviews with teachers and students about research-based learning showed that they understood but it was difficult to apply it to classroom learning activities. various kinds of understanding. Interviews with lecturers also obtained information about research-based learning. The results of the interviews indicated that there were no lecturers who had implemented research-based learning in classroom learning activities. Based on the expert opinion above about the need for research-based learning to be applied in classroom learning activities as well as the results of observations and interviews, it is necessary to examine how the perceptions of teachers and lecturers about research-based learning? The purpose of this study was to explore and describe how teachers and lecturers perceive research-based learning.

2. METHOD

The research approach used is a qualitative research approach; A qualitative approach is used to obtain detailed and in-depth information about research-based learning in terms of the perceptions of teachers and lecturers. The research subjects were 26 teachers consisting of chemistry, science, mathematics, physics, and biology teachers from different schools, and 24 lecturers consisting of MIPA (Mathematics, Chemistry, Physics, and Biology Department lecturers) from various universities. The data collection technique uses an open questionnaire via google form. The questionnaire results were analyzed according to

Moleong [11], the process of qualitative data analysis begins with examining all available data from various sources, namely interviews, observations that have been written in field notes, personal documents, official documents, photos and so on. After being reviewed, the next stage is data reduction, unit arrangement, categorization and finally the interpretation of the data about the perceptions of teachers and lecturers towards research-based learning.

3. RESULT AND DISCUSSION

Data on teacher and lecturer perceptions of research-based learning were obtained through an open questionnaire process. Teacher data consisted of 26 teachers consisting of chemistry, science, mathematics, physics, and biology teachers from different schools, while the data for 24 lecturers consisted of MIPA (Mathematics, Chemistry, Physics, and Biology) lecturers from various universities. The indicators for obtaining teachers and lecturers' perceptions of research-based learning, namely the educational background of teachers and lecturers, perceptions of the meaning of research-based learning, perceptions of the importance of research-based learning, perceptions of research-based learning models, perceptions of the advantages of research-based learning, learning weaknesses research-based, and the perception of ideally a research-based learning in classroom learning. The data obtained from the educational background of teachers as follows: 12% came from a Physics education background, 12% came from a Biology education background, 27% came from a Chemistry background, 27% came from a Science Education background, and 23% came from a Science education background. behind Math. While the educational background of lecturers obtained data: 21% came from a Physics background, 12% came from a Biology education background, 50% came from a Chemistry background, and 17% came from a Mathematics background.

Teacher b argues that In my opinion, Research-Based Learning, is learning that departs from the results of analysis, hypotheses, experiences, surveys, which are tested and measured, as well as effective and efficient. strategies in research integration in lectures. namely: enriching teaching materials with the results of lecturer's research, using the latest research findings, and enriching learning activities with contemporary research issues, while teachers c Research Based Learning or Research Based Learning is the integration of research into learning, the same thing was stated by the lecturer a Learning that involves research in it and uses the student center learning method. The essence of the four perceptions of teachers and lecturers that research-based learning is a learning activity / lecture in the form of research activities such as background problems, problem formulation, hypotheses, data collection, data

presentation / discussion, and drawing conclusions. In accordance with the opinion of experts such as [5] states that the research-based learning approach is a contextual and scientific learning approach and can improve

learning outcomes. Meanwhile [12], stated that the application of cooperative learning models can improve student learning outcomes, also improves critical thinking skills [13].

Table 1. Perceptions of teachers and lecturers about the definition of research-based learning

Teachers' Perceptions of Understanding Research-Based Learning	Lecturers' Perceptions of Understanding Research-Based Learning
<p>Research-based learning is authentic learning, solving problems and having the same goals</p> <p>In my opinion, Research-Based Learning, is learning that departs from the results of analysis, hypotheses, experiences, surveys, which are tested and measurable, as well as efficient and useful.</p> <p>Research Based Learning or Research Based Learning is the integration of research into learning</p> <p>Research-based learning is one of the methods in student-centered learning (SCL) which integrates research into the process. Authentic learning methods, problem solving, cooperative, contextual and inquiry approaches guided by the philosophy of constructivism.</p>	<p>a. Learning that applies research methods in classroom learning activities</p> <p>b. Research-based learning uses several strategies for integrating research into lectures. namely: enriching teaching materials with the results of lecturer research, using the latest research findings, and enriching learning activities with contemporary research issues</p> <p>c. Learning that involves research in it and uses the student center learning method</p> <p>d. Learning whose teaching materials are based on research results</p>

The results of the research on the perceptions of teachers and lecturers about the important value of implementing research-based learning are the same. As many as 26 teachers said it was very important to apply research-based learning (100%) very much. Meanwhile, as many as 24 lecturers, 95.8% stated that the implementation of research-based learning in class was very high, only 4.2% were less than seventh. As shown in Figure 1.

The reason for lecturers who are less than seventh or not as seventh as the application of research-based learning is the limitation of the media that will be used and requires money, while the principle of students is that it is a small cost to get a lot of knowledge. While some of the reasons for teachers and lecturers who agree with the implementation of research-based learning are illustrated in Table 2.

2. Menurut Bapak/Ibu sebagai praktisi, apakah Pembelajaran Berbasis Riset penting untuk diterapkan dalam pembelajaran ?
26 tanggapan



(a)

2. Menurut Bapak/Ibu sebagai ahli, apakah Pembelajaran Berbasis Riset penting untuk diterapkan dalam pembelajaran ?
24 tanggapan



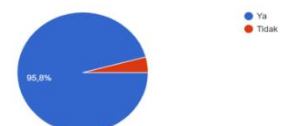
(b)

Figure 1. Teacher (a) and lecturers' (b) perceptions of the importance of implementing research-based learning.

Table 2. The reasons for teachers and lecturers who agree with the implementation of research-based learning

Teachers' reason about the importance of implementing research-based learning	Lecturers' reason about the importance of implementing research-based learning
It is very important, because we can teach the method so as to increase good learning outcomes	Prepares students to dare to be creative and innovate based on the results of their own research.

2. Menurut Bapak/Ibu sebagai ahli, apakah Pembelajaran Berbasis Riset penting untuk diterapkan dalam pembelajaran ?
24 tanggapan



<p>The creation of high-order thinking skills</p> <p>It is very important because it can help the learning process and improve the quality of education</p> <p>Train children to learn to do research</p>	<p>Learning is more updated according to the development of science and technology</p> <p>Because it can be used later when you are no longer in college, it can be applied to your place of work or you can do research</p> <p>The teaching materials presented are empirical and link and match between theory and practice</p>
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The reasons given by teachers and lecturers are almost the same, namely to improve the learning process, innovate in learning, students / students are more creative, learning is more meaningful, more contextual because it uses field empirical data. The same reason as expressed by [8] that research-based learning can contribute to the growth of student skills in doing research. Meanwhile, [14] states that research-based learning as a form of innovation in the implementation of learning at this time contributes to students so that they have critical thinking skills needed in the era of globalization. Another researcher, [15] states that learning that takes place in schools should apply the principles of cognitive-constructivist theory and behavior modeling theory so that the active independence of students as learners can be realized.

Teachers and lecturers' perceptions about Research-Based Learning, the teacher states that ideally a research-based learning is that before activities are conveyed the learning objectives should choose the right material that will be linked to research, then in the learning process it begins with factual problems, so that students are actively involved in solving the problem. There are several strategies in combining empirical learning and research, including teaching research method materials in the learning process [16]. Meanwhile, not many lecturers have implemented research-based learning, this happened because of the extraordinary obligation of the lecturers. Based on the perceptions of teachers and lecturers about Research Based Learning above, among them the teacher states that learning departs from the results of analysis, hypotheses, tested and measured survey experiences, while the lecturer states that learning uses several strategies in integrating research in lectures. In research-based learning activities, ethics, and research practices that are in accordance with the field of study / subjects being taught can be conveyed to provide inspiration to students [17-19]. The conclusion from their perception, that research-based learning is a learning activity in the form of research activities such as background problems, problem formulation, hypotheses, data collection, discussion, and conclusions.

2. Sintak Desain Pembelajaran Berbasis Riset

No	Langkah kegiatan	Deskripsi Kegiatan
01	Orientasi	Disajikan wacana atau tabel atau gambar atau video yang mengambarkan permasalahan yang sesuai dengan topik pembelajaran, permasalahan bisa didapat dari data lapangan atau studi literatur, serta permasalahan tersebut sesuai untuk dilakukan penelitian, peserta didik dapat menganalisis dan mengidentifikasi permasalahan yang ada dalam wacana.
02	Merumuskan masalah	Berdasarkan pada wacana atau tabel atau gambar atau video yang disajikan, peserta didik dapat mengidentifikasi permasalahan yang ada serta dapat membuat rumusan masalah dengan benar
03	Mengumpulkan informasi	Peserta didik melakukan pengumpulan informasi melalui studi pustaka, wawancara dengan narasumber, observasi lapangan, dan dokumentasi. Pengumpulan informasi bisa berbasis internet (internet of things). Kegiatan ini digunakan untuk mendapat teori atau kebenaran fakta yang dipakini tentang permasalahannya.
04	Merumuskan hipotesis	Berdasarkan informasi yang telah terkumpul melalui studi pustaka, wawancara dengan narasumber, observasi lapangan, dan dokumen, maka peserta didik dapat membuat rumusan hipotesis.
05	Diskusi/Pembahasan	Tahap diskusi atau pembahasan adalah melakukan analisis data yang dikumpulkan melalui studi pustaka, wawancara dengan narasumber, observasi lapangan, dan dokumentasi. Serta dukungan dari penelitian terdahulu untuk mendapatkan kebenaran hipotesis atau mendeskripsikan hasil wawancara dengan narasumber dan data dokumen.
06	Kesimpulan	Berdasarkan hasil diskusi, maka peserta didik dapat membuat kesimpulan.

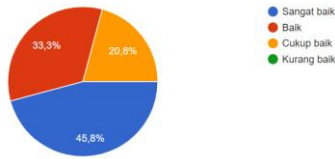
Figure 2. Research-based learning syntax.

Then a research-based learning syntax is compiled as in Figure 2. Teacher perceptions data about the problems presented at the orientation stage, as expressed by the Teacher RF "The problems obtained from field data and problems from literature studies lead to problem formulation", while another teacher, Mrs. RMP stated "What is more appropriate is social problems related to the activities of the surrounding environment and society ", another teacher, Mr. X stated" Learning in accordance with the needs of the community in order to be able to solve problems faced in the community ". Ibu Y stated "looking for understanding and understanding related to research that will be used in making the discourse itself". From the teacher's perception it can be concluded that the problems presented in the orientation activity are based on 85% field data, the rest are problems from the review literature.

The lecturers' perceptions about the problems presented in the orientation step, which was started by Mrs. HY "the results of research from various sources and also research from lecturers related to the field to be taught", while Ms. MEH stated "the learning video is in accordance with the material to be delivered". Another lecturer, Mr. HT argued, "The problems presented at the time of orientation are problems that are contextual in nature (occurring in society or being experienced). From the hot topic raised the problem to find a solution ", and Mr. HM stated" Problems related to events in natural / real phenomena ". The lecturers' perceptions can be concluded that the problems presented in the orientation activity are contextual field data [20].

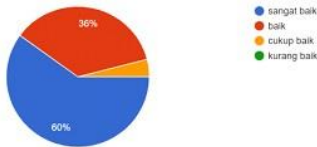
Perceptions of teachers and lecturers about syntax steps and their descriptions, are presented in Figure 3.

6. Berdasarkan sintak dari Pembelajaran Berbasis Riset (gambar 2) bagaimana desainnya menurut bapak/ibu dalam mencapai tujuan pembelajaran (Capaian akhir yang diharapkan) ?
24 tanggapan



(a)

6. Berdasarkan sintak dari Pembelajaran Berbasis Riset (gambar 1) bagaimana desainnya menurut bapak/ibu dalam mencapai tujuan pembelajaran (Capaian akhir yang diharapkan) ?
25 tanggapan



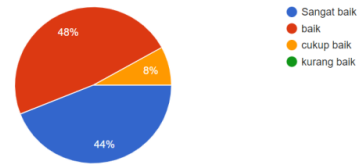
(b)

Figure 3. Teachers (a) and lecturers' (b) perceptions syntax steps and their descriptions Research-Based Learning.

The research data shows that the teacher strongly supports the steps in the syntax of research-based learning design, this can be seen that 60% of the teachers stated it was very good, 30% was good, the remaining 10% was quite good. While the perceptions of lecturers varied, 45.8% was very good, 33.3% said it was good, while 20.8% was quite good. The steps in the research-based learning design syntax are very good. This is also in accordance with the advice of lecturer X "The syntax that is presented is very good, so it is hoped that students are not wrong in doing research", lecturer Z "Scientific, factual, conceptual, procedural, and metacognitive", lecturer Y "The advantages of the approach of this method are able to increase students to think and solve problems in real life needed to meet the needs of today's education and create inspirational learning", and XY lecturers" require students to be motivated in discussions, find sources of information and make students communicate both verbally and also tulissan. Meanwhile, the advice from teacher A "Research-Based Learning Design, so far in my opinion, has been very good and good, so it is necessary and must be continued, continued, developed, and disseminated", teacher B "Problem formulation and field observations can be in the form of research assignments from the teacher. as well as the research interest of learning participants", teacher C" Research-based learning can improve learning outcomes so it is necessary to hold training and socialization for teachers regarding this research-

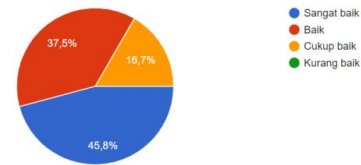
based learning". Based on research data and suggestions from teachers and lecturers, it can be concluded that the syntax in research-based learning design is very good. The perceptions of teachers and lecturers about the description of each step in the syntax of research-based learning design, as in Figure 4.

7. Berdasarkan sintak dari Pembelajaran Berbasis Riset (gambar 1) bagaimana deskripsi kegiatannya menurut bapak/ibu dalam mencapai tujuan dari setiap tahap kegiatan ?
25 tanggapan



(a)

7. Berdasarkan sintak dari Pembelajaran Berbasis Riset (gambar 2) bagaimana deskripsi kegiatannya menurut bapak/ibu dalam mencapai tujuan dari setiap tahap kegiatan ?
24 tanggapan



(b)

Figure 4. Teachers (a) & lecturers' (b) perceptions about the description of each step in the syntax of Research-Based Learning

The research data shows that teachers and lecturers support the description at each step in the research-based learning design; this can be seen by teachers and lecturers. The teacher stated that the maximum support was 44% (very good), the teacher said it was very good, 48% said it was good, 8% said it was quite good. Meanwhile, the lecturers stated that the maximum support of 45.8% was very good, 37.5% stated that it was good, while 16.7% was quite good. Based on the support data for teachers and lecturers on the syntax description of research-based learning design, this data is supported by the advantages expressed by the teacher, namely: teacher a "the advantages of all the stages are very clear and not confusing", teacher b "can make critical thinking", the teacher c "solves real problems (facts), and is able to realize effective and inspirational learning", and the teacher d "students can directly observe the theoretical study, expand students' thinking so that they are accustomed to HOTS, easy to understand because they are slow to observe and the teacher is a facilitator and motivator can help students anytime ". According to Rahim, 2018 stated that with the implementation of research-based learning, the ability to think creatively in Physics

Education FMIPA UNP students is expected to increase. Meanwhile, according to the lecturer, as follows, lecturer a "The syntax that is presented is very good, so it is hoped that the students are not wrong in doing research", lecturer b "Makes students accustomed to taking scientific steps", lecturer c "The model is already good is complete", lecturer d "the advantages of the approach / model are clear so that it can understand the stages and be structured in research-based learning". Based on the data and opinions of teachers and lecturers, it can be concluded that the descriptions presented are good and can be used for classroom learning.

4. CONCLUSION

According to the perceptions of teachers and lecturers about research-based learning, they have the same opinion about the meaning and importance of research-based learning. Teachers and lecturers agree that the implementation of research-based learning activities, as well as the syntax structure and description, the teacher and lecturer agree to give very good and good grades. So, it can be concluded that the developed research-based learning design can be tested, according to the suggestions of teachers and lecturers.

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