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Needs Analysis of Link and Match on Research Methodology Course: Student-Lecturer Based Teaching and Learning Experiences

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ABSTRACT

Research methodology is a mandatory course in higher education. Students are expected to be able to compile research and solve problems according to their field of study. However, many students still have difficulty operationalizing research competency indicators. This research aims to reveal learning needs through the experience of lecturers teaching and students learning in research methodology courses. This research uses an interpretive relativity paradigm with a narrative inquiry approach. Lecturers and students as participants. Data collection techniques using interviews. Data were analyzed using content analysis. By exploring lecturers' teaching experiences and students' learning experiences, information on learning needs is obtained. The learning needs include learning outcomes, literacy technology, learning time, lecturer's teaching experience, obstacles or shortcomings faced by lecturers, and the final learning product. Through the link and match between the learning needs of students and the fulfillment of learning needs from lecturers, a research methodology learning needs analysis is obtained, including learning outcomes, technological literacy, learning time, lecturer teaching experience, obstacles lecturers face, and the final learning product.

***Keywords*:**

Teaching Experience; Learning Experience; Research Methodology.

ABSTRAK

Metodologi penelitian merupakan mata kuliah wajib di perguruan tinggi. Mahasiswa diharapkan mampu menyusun penelitian serta memecahkan

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masalah sesuai bidang studinya. namun, masih banyak mahasiswa yang kesulitan dalam mengoperasionalkan indikator kompetensi penelitian, Tujuan penelitian ini mengungkap kebutuhan pembelajaran melalui pengalaman dosen mengajar dan mahasiswa belajar pada mata kuliah metodologi penelitian. Penelitian ini menggunakan paradigma relativitas interpretatif dengan pendekatan inkuiri naratif. Dosen dan mahasiswa sebagai partisipan. Teknik pengambilan data dengan wawancara. Data dianalisis dengan analisis isi. Melalui penggalian pengalaman dosen mengajar dan pengalaman siswa belajar, diperoleh informasi kebutuhan pembelajaran. Adapun kebutuhan pembelajaran tersebut meliputi: capaian pembelajaran, teknologi literasi, waktu pembelajaran, pengalaman mengajar dosen, kendala atau kekurangan yang di hadapi dosen, produk akhir pembelajaran. Melalui link and match antara kebutuhan pembelajaran dari mahasiswa dan pemenuhan kebutuhan pembelajaran dari dosen diperoleh analisis kebutuhan pembelajaran metodologi penelitian meliputi: capaian pembelajaran, literasi teknologi, waktu pembelajaran, pengalaman mengajar dosen, kendala yang dihadapi dosen, dan produk akhir pembelajaran.

***Kata kunci*:**

Pengalaman Mengajar; Pengalaman Belajar; Metodologi Penelitian.

1. Introduction

Learning research methodology is a compulsory course in higher education. Students are expected to be able to organize scientific research papers useful for solving problems according to their field of study. Many researchers have focused on developing research competencies to realize successful researchers (Bromley & Warnock, 2021; Davis & Jones, 2017). Research competence is the ability to conduct scientific research to seek scientific truth by applying scientific methods based on proven scientific reasoning. Measurement of research competence includes six subscales: problem identification and formulation of research questions, literature search and review, research design, research implementation, data analysis, and writing of research reports (Chen, Liu, Zhou, & Tang, 2020). However, the portrait of research competency of prospective teachers, both formal research or classroom action research by prospective teachers and current teachers, is still low; this is because the motivation to write scientific papers for teacher professional development is low (Leonard & Wibawa, 2020); (Caingcoy, 2020). Knowledge, understanding, and experience of teachers about research are still lacking (Annury, 2019), competency in handling research methodology, data analysis, and discussion is still low (Siddiqah Olatope Oyedokun, 2019), many students still struggle to actualize the indicators of research competence (Toquero, 2021), pre-service teachers find research frustrating and stressful little one wants to do therefore (Katwijk, Berry, Jansen, & Veen, 2019) They consider that the most poorly acquired competencies are state-of-the-art reviewing, content knowledge, and communicative skills (Ciraso-Calí, Martínez-Fernández, París-Mañas, Sánchez-Martí, & García-Ravidá, 2022), this research wants to reveal both lecturers' teaching experiences and

students' learning experiences in the research methodology course to analyze learning needs using link and match theory.

Needs analysis plays an important role in designing the curriculum. In particular, the analysis of needs largely determines the objectives and material of learning (Malicka, Gilabert Guerrero, & Norris, 2019). The needs analysis is divided into three segments: shortcomings, needs, and wants. The shortcomings of identifying what learners can and cannot do and the need to describe what is required in the learner to learn. At the same time, desire tells us what the learner wants to learn. Needs analysis is a process carried out to identify gaps that occur between actual results obtained and expected results. The process involves identifying opportunities, finding and describing problems, stating questions, building hypotheses, reducing possibilities, describing the relationships between existing parts and elements, separating fact and fiction, and giving judgments and recommendations. Needs analysis plays an important role in designing the curriculum. In particular, the analysis of needs largely determines the objectives and material of learning (Malicka et al., 2019). The needs analysis is divided into three segments: shortcomings, needs, and wants. The shortcomings of identifying what learners can and cannot do and the need to describe what is required in the learner to learn. At the same time, desire tells us what the learner wants to learn. Needs analysis is a process carried out to identify gaps that occur between actual results obtained and expected results. The process involves identifying opportunities, finding and describing problems, stating questions, building hypotheses, reducing possibilities, describing the relationships between existing parts and elements, separating fact and fiction, and giving judgments and recommendations (Widodo, 2017).

The concept of link and match is widely applied to vocational education, such as extracting competencies that meet the link and match between vocational school competencies and industry (Wibisono, Wijanarka, & Theophile, 2020) (Azman, Simatupang, Karudin, & Dakhi, 2020), factors that are the main keys that influence the link and match between TVET and industry needs (Ali, Mardapi, & Koehler, 2020). The concept of link and match is also applied to the field of humanities, which is related to cultural values. Through the link and match concept, the results of research and development are expected to be able to solve social problems and improve social welfare (Suherlan, 2017).

The term link or linkage refers to educational programs with a clear link to market needs. The market in this context can be viewed broadly as analogous to the concept of the educational constituency, namely various parties who use services or are interested in the education system. Students, teachers, administrators, surrounding communities, and governments can all be considered educational constituencies. Matching is harmony, which means that existing educational programs related to these various interests must be equated with the number, level of quality, and value that is required or required by changes in interests that will always occur in the constitution. Thus, the match has a broader and deeper weight. The link embodied in the design and management is incarnated in implementing programs and assessments in operational actions. Links are more likely to be used as a planning language, whereas matches are more likely to be used as a judgment or measurement language. Finding or straightening out the relevance between the process and output of education with all of society's needs is essentially what link and match is all about. This study aims to explore lecturers' teaching experiences and student learning experiences in research methodology courses at

universities using a link-and-match theory approach. The study results indicate that using needs analysis in learning research methodology can be used to be indifferent in designing appropriate and effective learning models and evaluations.

2. Methods

2.1. Research Design

This study uses a qualitative method with a narrative inquiry approach to explore and describe the results of understanding or experience (Higgins & Misawa, 2021); (Dimaculangan, Hadji Abas, & Quinto, 2022). Previous researchers have widely researched teaching experiences and learning experiences (Culajara, Culajara, Portos, & Villapando, 2022; Johari, Said, & Roslan, 2023). Obtaining data from participants using interviews with semi-structured techniques (Karatsareas, 2022) and written interviews (Liu, 2021).

2.2 Participants

Participants in the research are introductory research lecturers and prospective students of building engineering education teachers at one of the universities in Indonesia. Recruiting participants are notified through the WhatsApp group and notified directly when learning is completed. The selection of participants is carried out voluntarily without coercion. 4 lecturers (D1, D2, D3, D4) and 11 students (I1, I2, I3, I4, I5, I6, I7. I8. I9. I10, I11) are willing to be participants. Participants are native Indonesians. Before conducting the interview, participants were asked for their willingness to fill out the form of ability to engage in this research through an online form. In writing the names of participants, they are written with the names of initials to maintain privacy which is an ethic in research.

2.3 Data collection

Data collection techniques are carried out through interviews. Interviews were conducted semi-structured regarding the experiences of teaching lecturers and students learning an introduction to research. Interview questions include: How is the implementation of learning, What obstacles are experienced at the time of learning, and What strategies are carried out in the learning time. The data are classified into four parts, namely: (1) information about the student's background; (2) students' adaptability in learning; (3) student strategies to become autonomous learners and (4) student strategies to develop learning motivation. In building data trustworthiness and maintaining ethics in data collection, lecturers as participants are allowed to check the interview data (member checking) before the data is analyzed (Candela, 2019).

2.4 Data Analysis

The collected data is analyzed using thematic content analysis (Ferdiansyah, Supiastutik, & Angin, 2020). In transcribing the results of the interview, the following process: it is recommended to record interview data repeatedly to find important themes needed, transcribe interview data for

coding, sort out and classify important data, interpret interview data, involve participants in providing feedback on the results of data interpretation to produce reliable data. The results of the data transcript are then coded according to the theme using the QSR Nvivo 12+ application.

3. Results and Discussion

Data is obtained by interviewing lecturers and students who teach research methodology and thesis courses. Data were analyzed using QSR Nvivo 12+. The data is grouped based on the code that has been created, and then a project map and framework matrix are formed.

3.1 Teaching Experience of Lecturers

3.1.1 Learning Targets

The results of the learning outcome data analysis are shown in Figure 1.

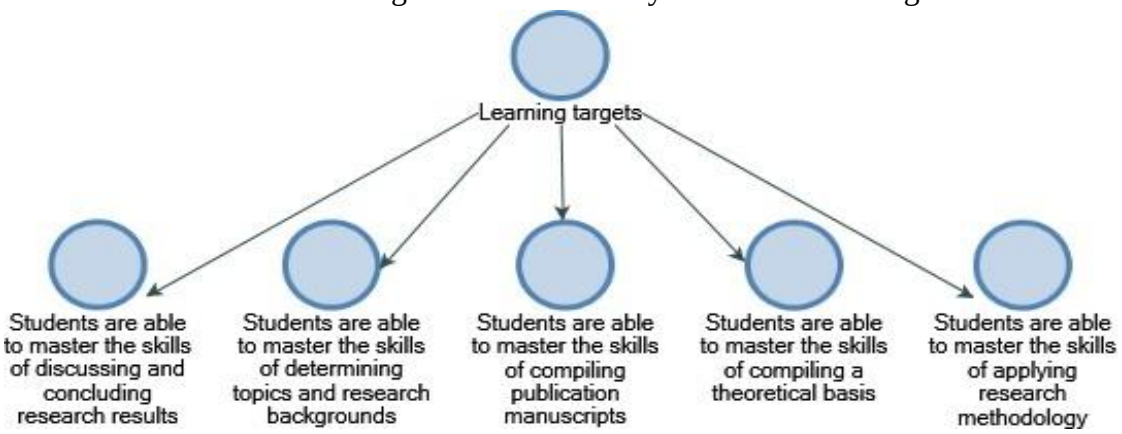

Figure 1. Learning Targets Project Map

a) Students can master the skills of discussing and concluding research results.
   The following results of the interview evidence this statement. The lecturer will teach them how to analyze the data (D1).
b) Students can master determining the topic and research background.
   One lecturer stated that students had been trained to write a thesis as outlined in the RPS. The lecturer also noted that the students were well-trained to design a well-organized thesis, as seen by how they formulated research problems in chapter one before continuing to chapter two (D1), and students were well-trained in making a research background (D2). Students have empirically organized their often-encountered concerns into well-organized ideas to complete their tasks (D4).
c) Students can master the skills of applying research methodologies.
   The lecturer assured students that he would incorporate data analysis into his methodological lecture so that they would fully understand how to analyze data (D1).
d) Students can master the skills of compiling theoretical foundations.
   In Chapter 2, students learned about identifying research variables and were asked to focus on composing variable(s) and creating a research instrument (D1).

e) Students can master the skills of compiling publication manuscripts.
Students will be required to submit papers in addition to compiling theses. However, the lecturers seem to have not urged to target students for article writing because they have only moved into the area at the proposal (D1).

3.1.2 The Importance of Using Technology in Navigating Research Results (Journal Web Addresses, Plagiarism Checks, Language Checks, Paper Writing, etc.)

Navigation research is shown in Figure 2.

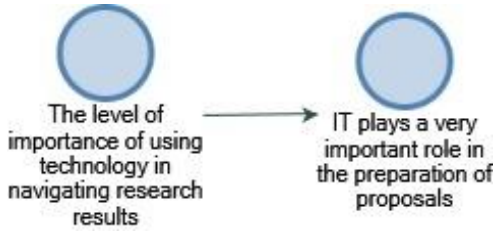

Figure 2. The Level of Importance of Using Technology in Navigating Research Results

The statement is evidenced by the interview results: A lecturer stated that when he teaches grammar or morphology, he frequently introduces students to journal articles, including how to access SINTA indexation and their registered journals (D2). In addition, in teaching, we must ensure that students are well-informed about organizing citing references is a vital feature to be incorporated in the subject (D4). Then one of the lecturers stated that he checked the students' papers to reduce mistakes, that he taught them how to avoid major plagiarism, and that he also taught them steps and strategies related to plagiarism checks, even though there are available to use, but that bachelor students are exposed to the issue of plagiarism (D4).

3.1.3 Degree of Importance of Using Research Results as Material Support Materials

Result results are shown in Figure 3.

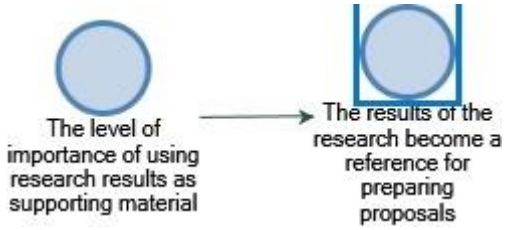

Figure 3. Project Map Level of Importance of Using Research Results as Material Support

Students were asked to analyze articles by a lecturer when he taught quantitative methods. They were also assigned to look for journal articles. When they attended the lecturer's lecture, they were asked if they had read the title they were looking for and the correlation between one research topic and another, for instance, if the topic was instrumented and whether the instruments used were correct. Students were asked to

understand which research is their reference. In collecting quantitative data, for example, as researchers, students will need various strategies in dealing with informants (D2). The lecturer realized that imposing writing on students reminded him of how difficult it was for him to deal with writing scientific papers. Furthermore, the lecturer shared his own experience while writing a research paper. He explained to students how he and his fellow lecturers struggle to write articles that can be published in Scopus-indexed journals. In addition to writing activity training, lecturers are becoming acquainted with writing and citation strategies through the reference manager (D4).

3.1.4 Strategies and Suggestions for Improving The Competence of Teaching Research Methodologies

Strategies and suggestions to improve the teaching competence of research are shown in Figure 4.

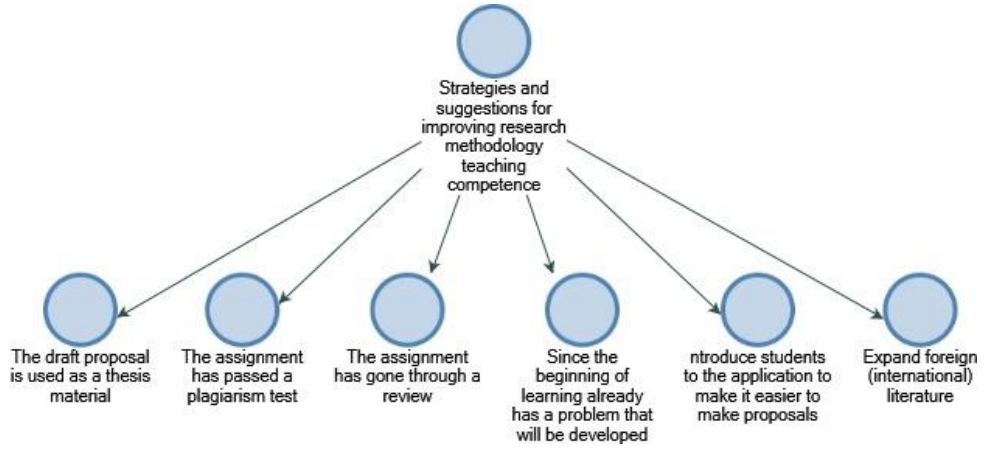

Figure 4. Project Map Strategies and Suggestions to Improve Teaching Competence of Research Methodologies

a) The draft proposal is used as thesis material.
The lecturer disclosed that if the learning model were not used from the start of the semester to analyze articles and comment on students' work, students would struggle to complete the next process. Lecturers can incorporate research models and in-depth discussions of these models into each subject taught where the learning process is thesis-oriented. The topic of discussion can refer to the problems that students face and how a course can enlighten and inspire them to complete their final project research (D4).
b) Introduce students with applications to make proposals easier.
The lecturer said he had repeatedly taught students how to use Excel and SPSS, particularly in Statistics courses (D2). Even though students are known to be somewhat passive in terms of work, they tend to be supported and encouraged before moving on (D3). Regarding the reference model, lecturers conduct a self-study and teach how to use reference manager tools. It was stated that the reference manager had facilitated a lot of work that would have previously taken up a lot of time, citing physical books that would

have previously required students to go to the library. Still, now this can be done online through the available database (D4).

c) Expand foreign literature.
During the learning process, it was discovered that students had difficulty finding international research topics. Most of them continue to rely on local sources, whose logic, according to the lecturer, is quite simple and limited compared to richer international sources. Most students struggled with English references, so they relied on translated literature. (D3). Lecturers encourage students to habitually cite English-language sources to become more proficient in English on one side later on (D4).

d) From the beginning of learning already has problems to develop.
During lectures, bachelor students admitted they had no idea about the hypothesized issue. This makes them hesitant to present their work; if presented directly, it can be clarified again (D3). Even after finishing methods, undergraduate students struggle to determine research topics despite intensive guidance from the teaching lecturer (D4).

e) The task has already gone through a review.
As a result, the lecturer only asks students to evaluate the title, the qualitative/quantitative research method, the instruments used, how the writer conducts the analysis, and the advantages and disadvantages of the research. (D1).

f) The task has gone through a plagiarism test.
The assignments submitted by his students had been tested for plagiarism (D1). Students were found to be related to the degree of similarity in the title and content of scientific work to that of others on several occasions. According to the lecturer, the testing phase of student work similarity in the task stage should be carried out (D2). Conducting plagiarism exams through TurnItIn allows lecturers to monitor students' proclivity better to unethically copy and paste other people's work, particularly for students in the Faculty of Sports (D4).

3.1.5 End-of-Learning Products

The end of the learning product project map is shown in Figure 5.

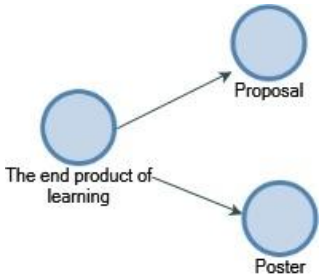

Figure 5. End of Learning Product Project Map

Posters and proposals. Both lecturers and students have made attempts. Students conducted mini-research, which they then analyzed and explored in the form of posters

(D2). Other lecturers confirmed that the average final project for the courses they taught was proposals because they hoped that students would be able to compile proposals from this research methodology course." (D1, D2, D3, & D4).

3.1.6 Teaching Experience Relating to Topic-Defining Skills and Background

Teaching experience related to determining topics and background skills is shown in Figure 6.

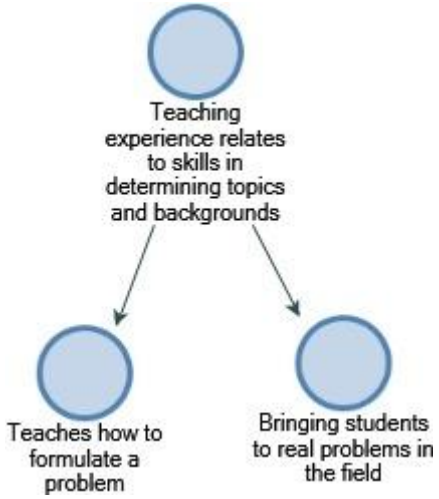

Figure 6. Project Map of Teaching Experience Related to Determining Topics and Background Skills

a) Bringing students to real problems in the field.
Collaboration with teachers in schools is one that we emphasize because they have not yet entered the sector and only the theory of how to learn is accepted, but students do the real learning, or rather the teacher's class (D1). The next initiative related to the second course entails going directly to the application until they identify the problem (D4).
b) Teaches how to formulate problems.
Who used to explain in detail to him about the different types of research and provide examples so that students could formulate a research problem (D1). After observing the title, the objective is to determine the procedure, particularly in the method, whether the procedure has come to produce findings or not (D3). Then, what is related to the second course is the continuation, namely, going directly to the application until students can find the problems that will lead them to the final task while also including those problems that can be raised effectively later on (D4).

3.1.7 Teaching Experience Related to The Skill of Building A Theoretical Foundation

Teaching experience related to the skills of compiling theoretical foundations is shown in Figure 7.

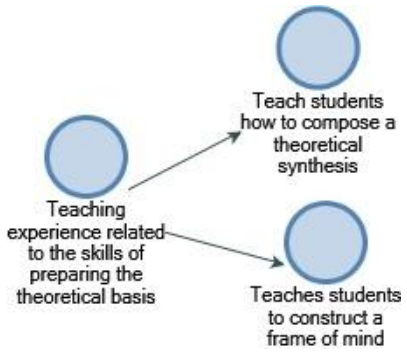

Figure 7. Project Map of Teaching Experience Related to The Skills of Compiling Theoretical Foundations

a) Teaches students how to compile theoretical synthesis.
When students have completed their variables, the lecturer will move on to Chapter 2, which is critical for theory synthesis. Students are asked to compose a variable and continue synthesizing the theory, which is how they create the instrument as we teach (D1).

b) Teaches students to build a frame of mind.
The lecturer informs the audience that the framework of thought is theoretical and leads to solutions to problems. As a result, that frame of mind serves as a link to the hypothesis. This is somewhat different from the manual, which states that a frame of mind is a temporary solution to a problem. Similarly, the background of the problem is included in the thinking framework. The framework is found in Chapter 2, which contains the theory of why there is a background. In this case, the students do not understand the guide, which states that it boils down to a provisional solution to the problem (D3).

3.1.8 Teaching Experience Relating Skills Applying Research Methodologies

Teaching experience related to the skills of applying research methodologies are shown in Figure 8

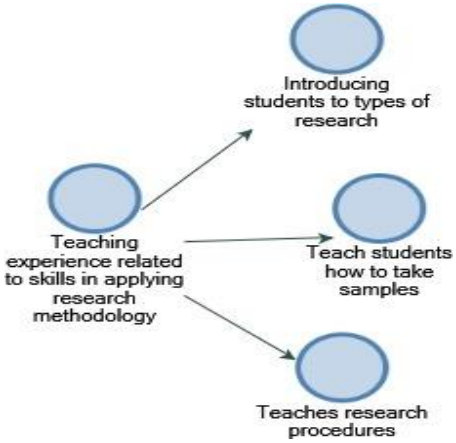

Figure 8. Project Map of Teaching Experience Related to The Skills of Applying Research Methodologies

a) Teacher students how to take samples
b) The first lecturer also continued the explanation of the sample, how to hypothesize, and so on (D1). According to him, the lecturer previously explained in the lecture contract that he had combined two courses that later in the first week until quantitative was learned, for example, starting from the introduction of concepts about data, data variables, sampling techniques, populations, instrument development to plotted data analysis in time (D2). Teaching research procedures.
c) Lecturers examined student work to determine whether it described the problem for this study. After examining the title, the lecturer moves on to formulating the problem to determine whether or not the procedure produced findings (D3). According to the lecturer, the basis of research includes scientific discovery steps, content and how to study it, variables and how to find these research variables (D4). Introduce students to the types of research.

3.1.9 Constraints

The constraints or deficiencies are shown in Figure 9.

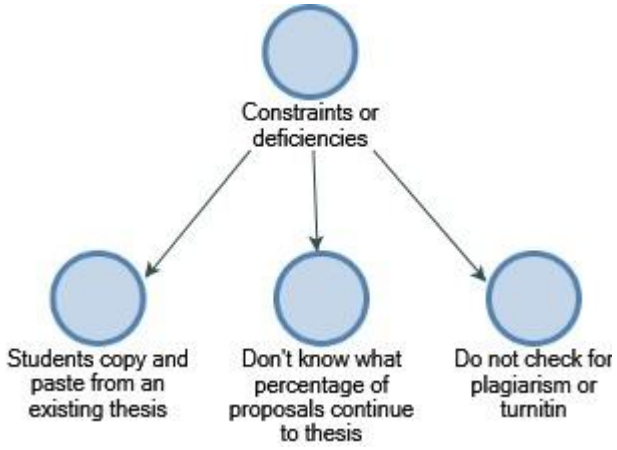

Figure 9. Project Map Constraints or Deficiencies

a) Students copy and paste from existing thesis.
The large number of students can sometimes make intensive guidance difficult. According to the lecturer, the average class size is 38 students, and the number of classes is divided into two. When lecturers encounter students who only copy and paste other people's work to meet the demands of their assignments, the lecturer instructs them to check Turnitin first before submitting it to the lecturer (D2).
b) Do not do plagiarism or turnitin checks.
The lecturer emphasised that he would feel guilty if he could rely on students not to run plagiarism checks before hand (D1).
c) Not knowing what percentage of proposals go on to the thesis.
The lecturer admitted that students could have wasted a lot of time. Even if the proposal has been tested, it is possible that it will change in the middle of the road. Changes and

reforms in the research framework, for example, may occur, especially in qualitative studies. For example, if a student wishes to analyze a literary text but discovers that someone else has already done so, the lecturer will instruct the student not to proceed with his research (D3).

3.2 Data from Interviews with Students

3.2.1 Strategies Carried Out to Complete Competency Deficiencies in Thesis Writing

Strategies Carried Out to Complete Competency Deficiencies in Thesis Writing are shown in Figure 10.

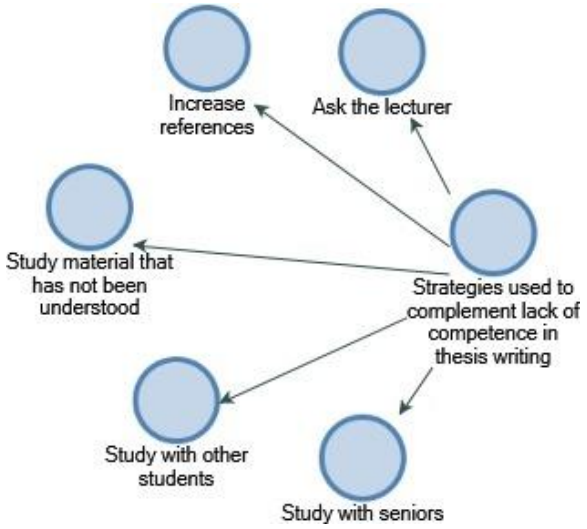

Figure 10. Project Map Strategies Carried Out to Complete Competency Deficiencies in Thesis Writing

a) Study with big brother level.
   Lecturers recommend that students learn from their seniors who have completed their previous research (I2), among other things, about research methods (I9). In interviews, students admit that the lecturers have been very helpful, and that if they need more information, they will consult with their seniors (I10).
b) Study with other college students.
c) Some interviewed students stated that tutoring with fellow students is more comfortable and can be more relaxed if there are things that are not yet understood (I2). Students benefit from student tutoring and supervisors." (I8), they can talk to a friend who is also working on a thesis (I11). Ask the lecturer. The students found the thesis process interesting if they asked a lot of friends and supervisors (I8-I9), and some said that supervisors and seniors helped them (I10).
d) Studying material that is not yet understood.
   The interviewed student stated that one of the objectives of research discussions is to learn about the process, data analysis, and material that had not been understood as instructed by their thesis supervisor (I6).

e) Multiply references.
Being able to add as many references as possible from the internet is an important step (I1) when conducting research. Students should ensure that there are available sources or similar studies that have previously been published as references (I2). Students have been advised to read and access as many scientific writings or theses as possible, by reading journals or citing more books relevant to their topics (I3), which can either be in the form of digital books or journals (I4).

3.2.2 Things Needed When Exploring Research Methods

Things to do when studying research methodology are shown in Figure 11.

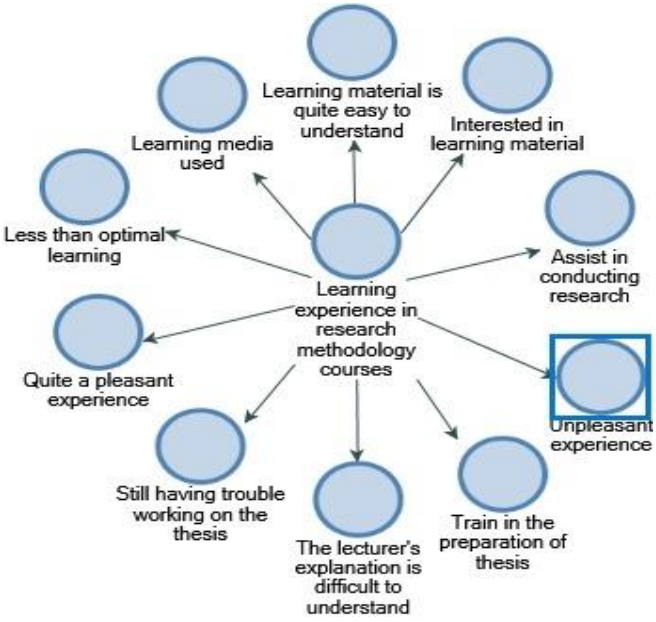

Figure 11. Project Map Things to Do When Studying Research Methodology

a) Internet access. Having an internet access has been the key issue in implementing a successful thesis completion (I9)
b) Learning tools. The use of laptop has been fundamental to student's process of thesis completion *(I4)*
c) Research support applications. The use of SPSS application has been helpful for students to analyze data (I9).
d) The idea of compiling a thesis proposal. According to the lecturer, it is possible to consider the concept that will be used in the future. Whether or not the research methodology course can be used in a future thesis (I5).
e) Learning materials. The using PPT Materials (I1) may include how to determine the theme of the research and how to know the best method for data processing (I6). It may also include instruction to students on how to conduct research and write research reports properly, how to find research references from credible sources, data collection

techniques, and research data processing (I10), as well as material on research methodology and examples of direct application in research (I11).

f) Learning motivation. Strong intentions and a passion for learning (I8).
g) The procedure for writing proposals. Writing techniques and flow in stringing chapters 1-3 (I3).
h) Book references. Students share their opinions on book references, which aid in understanding the research methodology (I2), (I6). Manual compiling theses from faculty, books, or journals on research methodology from experts and lecturers or teachers who understand and can explain research methodology courses well (I9).

3.2.3 Desired Expectations in Research Methods Lectures

Desired Expectations in Research Methodology Course are shown in Figure 12

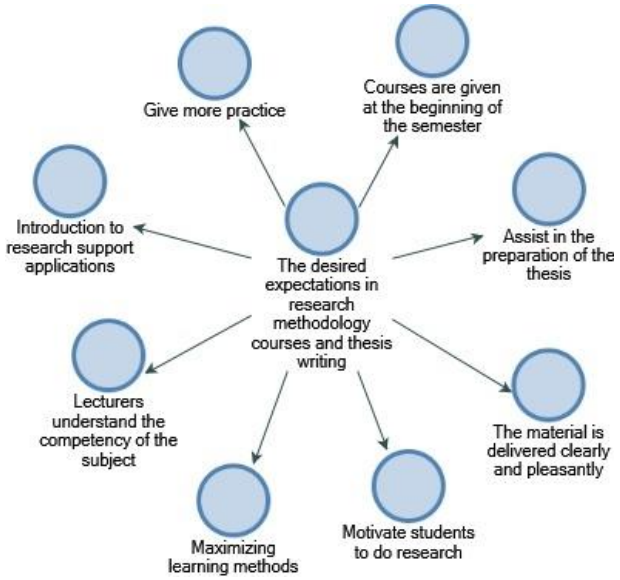

Figure 12. Project Map Desired Expectations in Research Methodology Course

a) Lecturers understand the competence of the course. In the course, can also understand the characteristics of different students. (I9)
b) Courses are given at the beginning of the semester (*I8)*
c) The material is delivered clearly and pleasantly.
   This material can be delivered to students in a clear and fun manner so as to make it easier for students to digest and understand the flow of the research methodology (I2)
d) Maximize learning methods.
   In lectures, it would be better to maximize learning methods such as question and answer, discussion, and problem analysis in doing assignments. (I6), varied methods, models and learning strategies. (I9)
e) Assist in the preparation of the thesis.

Students hoped that the research methodology and thesis writing courses would greatly help them in completing the thesis correctly and in line with the standard of thesis writing (I3), will best guide students in compiling a thesis while minimizing student confusion in determining the thesis title (I5) or the thesis preparation process (I10).

f) Provide more practice.
Providing more exercises can be helpful for students to be well-prepared about their thesis preparation (I1)

g) Motivate students to conduct research.
Motivate students to conduct scientific research that can hone skills (I10).

h) Introduction to research support applications.
More are introduced to applications that can facilitate the preparation of a thesis and are more explained in detail the stages or processes of the beginning to the end of thesis preparation. (I4)

3.2.4 Lack of Needs When Learning Research Methodology Courses in Order to Compile A Thesis

The lack of needs when learning research methodology courses in order to compile a thesis are shown in Figure 13.

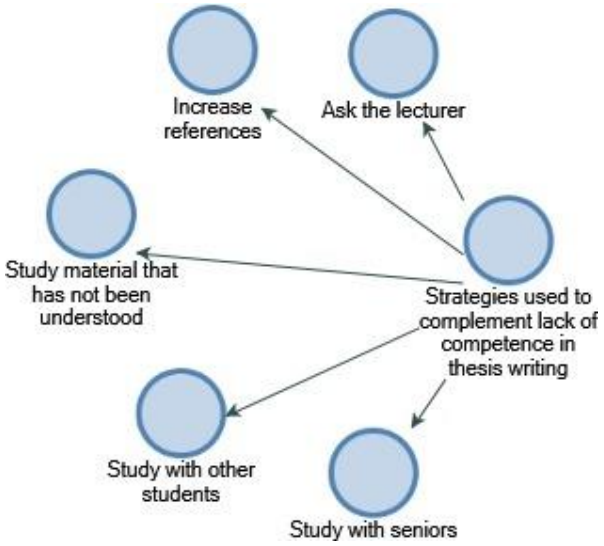

Figure 13. Lack of Needs When Learning Research Methodology Courses in Order to Compile a Thesis

a) A thesis example
b) Lack of learning time
c) Knowledge of research support applications
d) Explanation of the material
e) The material provided by the lecturer is incomplete and there are not many examples
f) Assignment of proposal preparation

3.2.5 Learning Experience of Research Methodology Courses

Learning experience of research methodology courses are shown in Figure 14

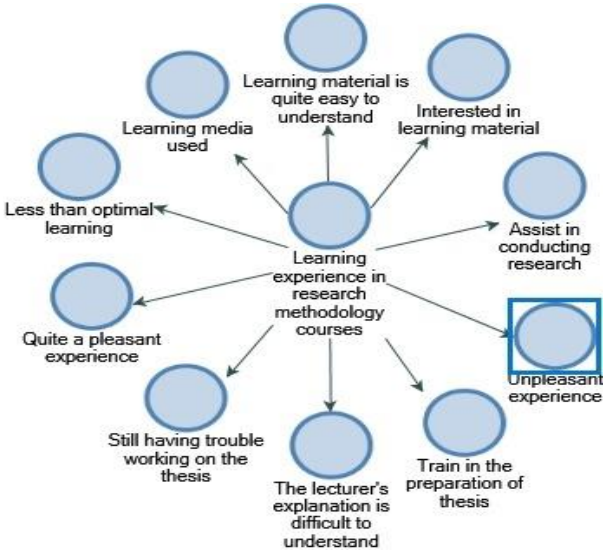

Figure 14. Learning Experience of Research Methodology Courses

a) Still having trouble when working on the thesis
   Students realized that they were still uncertain of what method to use during the research while working on their thesis (I2).
b) The learning material is quite easy to understand
   Students agreed that the lecturer's material was simple to grasp and enjoyable to learn (I8).
c) Learning media used. Google Classroom and Zoom are both used to deliver material, and Google Classroom has also been used to collect assignments assigned by lecturers (I4-I6).
d) Train in compiling a thesis
   The research methodology learning experience taught students how to connect the writing structure of chapters 1-3 and provides a framework for word choice in proposal writing (I3), The research methodology course has provided students an understanding of and exposure to research methods that they will need to use when writing a thesis in their final semester (I5)
e) Assist in the implementation of research
   Research methodology courses help students in understanding how to do thesis research. Some students said in class (I1) that they now find it simpler to understand research due to research methodology. Of the research, and how to do research with the help of IT based applications (I5), research methodology courses. (I11).
f) Learning is less than optimal
   Since all of the learning has so far taken place online, neither the instructors nor the students feel as though things are flowing smoothly.
g) Quite a pleasant experience

Some students stated that taking research methodology classes is enjoyable (I2).

Less pleasant experience.

Some students responded that they do not even enjoy research methodology because the course coincides with the COVID-19 pandemic (I4).

h) The lecturer's explanation is difficult to understand

Some students consider the course to be difficult; there are meetings that are poorly understood because the lecturers' explanations are quite difficult, leading to be less understood (I2).

i) Interested in learning materials.

3.2.6 The Learning Objective of Research Methodology According to Students

Learning objectives of research methodology are shown in Figure 15.

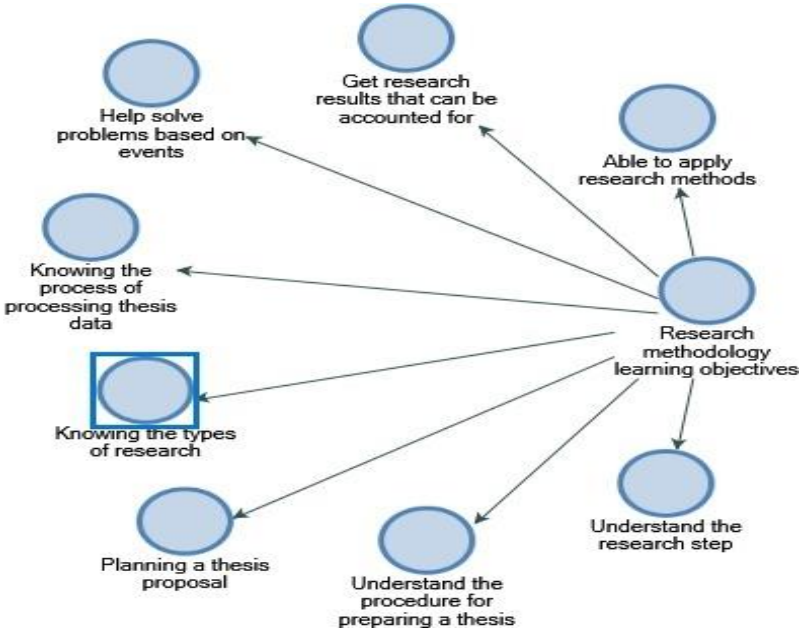

Figure 15. Learning Objectives of Research Methodology

a) Able to apply research methods

Having research methodology course has enabled students to apply the methods into their thesis.

b) Understand the research step

Students felt that the research methodology course helped them understand the steps for conducting research and preparing proposals and reports (I1).

c) The procedure for preparing a thesis

Some students stated that the primary objective of learning research methodology is to be able to assist them in writing or compiling a thesis, to know the proper steps regarding her thesis writing (I3, I4).

d) Help troubleshoot issues based on events

Research methodology course has been so helpful for students to study research-based events.

e) Accountable research results
Research accountability greatly enhances research data (I2) to produce an accountable result (I3).

f) Knowing the types of research
According to the interview's results, students' primary objective is to learn research methodology so they can determine the types of studies that are appropriate with the study objective and objects and then select the appropriate research methodology. (I11).

g) Knowing the process of processing thesis data
According to the interview, learning research methodology has the objective of determining what and how to research in the process of data processing when working on a thesis (I2).

h) Planning a thesis proposal
The primary objective of consulting student work to supervisors is to gain an understanding of the contents of the thesis chapters and plan the implementation of thesis proposals in semester 8. (I9)

3.3 Discussion

3.3.1 Learning Objective

Lecturers design learning methods for research methodology courses to improve student research competence, such as students being able to master the skills of determining topics and research background, being able to master the skills of compiling theoretical foundations, being able to master the skills of applying research methodology, being able to master the skills of discussing and concluding research results, and being able to master the skills of co-authoring research results. This is in line with the results of the research. The measurement of research competence includes six subscales, namely problem identification and formulation of research questions, literature search and review, research design, research implementation, data analysis and writing research reports.

3.3.2 Literacy Technology

The use of technology in navigating research results (such as journal web addresses, plagiarism checks, language checks, paper writing, etc.) According to the lecturer, the use of technology is very easy in preparing proposals because by using technology students can find journal reference sources easily, can check the grammar used in writing, and can check the level of plagiarism of the writing that has been made. Likewise, students in taking research methodology courses are able to find out about research support applications and internet access that can facilitate the preparation of a thesis. Information literacy skills positively affect students' research competencies.

Therefore, it is necessary to have the sustainability of research courses and research methodologies, the provision of resources and library services of scientific information sources (Oyedokun, Adekunmisi, Olusanya, Buraimo, & Bakre, 2019).

3.3.3 Literature Sources

The use of research findings as supporting material. Based on the lecturer's report, it is critical to use research results as material to support the material. Lecturers stress the importance of looking for journal articles to use as references when conducting research to students. Students, too, require easily accessible reference sources such as books and journals. Institutions must support libraries as relevant, up-to-date, and high-quality sources of web-based, print, and electronic scientific information (Oyedokun et al., 2019).

3.3.4 Learning Strategies

Learning methods greatly influence learning outcomes, such as generative learning model strategy can improve the ability to write texts (Susanto, 2023), This interactive learning method is also important in learning research methodology (Campbell & Brandon, 2024). Using the case study method as a way to link research and teaching, It helps students understand the practical relevance of research methodology (Lapoule & Lynch, 2018). Lecturers' strategies in improving teaching competence in research methodologies include the lecturers conditioning students to be ready to conduct research starting at the beginning of the semester by, introducing students to applications to make it easier to make proposals, teaching students about applications that can make it easier for students when conducting research, one of which is the SPSS application and internet sources that provide journal articles, expanding foreign (international) literature, guiding and teaching students to produce references or international literature. In addition, encouragingstudents to have research ideas or ideas at the beginning of the lecture providing the task of reviewing a journal article where students are required to identify the title, type of research, research instruments, data analysis, advantages and disadvantages of a study, introducing students about plagiarism test tool. Student strategies for filling gaps in research competencies include learning with other students, asking lecturers, and studying material which has not been understood. From the results of this presentation, it can be concluded that to improve the quality of education at the university level, synergy between teaching and research is needed.

3.3.5 Learning Expectations

Students expect that courses will be provided at the beginning of the semester, and that they will be delivered simply and favorably to help them digest and understand the flow of research methodology, to maximize learning methods, to help in the drafting of a thesis, to give them more practice, and to encourage them to conduct research,

discussing programs in research support. Students need learning resources when studying research methodology. The information is offered in the form of powerpoint slides and includes topics such as how to choose a research theme, how to understand the right data processing method, how to conduct research and properly put together reports, how to identify reference materials, and examples of its use in research.

The role of the supervisor in compiling thesis research according to students includes helping to graduate on time: providing understanding of the material, motivating students, directing or guiding students, providing guidance time, learning materials are quite easy to understand. The role of the supervisor in motivating students in successful research has a high weight on success in research (Koshmaganbetova, Kurmangaliyeva, Kashkinbayeva, Kurmangaliyev, & Alekenova, 2020).

3.3.6 LecturerTeaching Experience

The lecturer's experience in teaching relates to the skills of determining the topic and background: Bringing students to real problems in the field, Teaching how to formulate a problem, Teach students how to compile theoretical synthesis, Learning related to the skills of applying research methodologies, Teach students how to sample, Teaching research procedures, Introduce students to the types of research, Learning related to the skills of discussing and concluding research results, Teach students how to process data, Teach students how to process and discuss research results, Obstacles or shortcomings faced by lecturers, Students copy and paste from an existing thesis, Does not do plagiarism check or Turnitin, Not knowing what percentage of proposals go to the thesis.

3.3.7 Learning Media Used Google Classroom and Zoom Meeting

During online lectures, students feel that learning is not running optimally because it is carried out online so that learning and communication activities do not run well, the delivery of material is not much, the time for lecturers to correct student proposal assignments is not optimal. But students are happy because the research methodology leads students to research. Using mobile learning and e-learning technologies sangat diperlukan in teaching and learning process (Alfania, Wahyuningtyas, & Prasat, 2024; Jassim, 2020).

Students find it difficult to research, this is because many indicators of research skills have not been mastered by researchers. In line with the results of the study that there are many problems of research skills both theoretical and empirical such as the skill of searching and analyzing literature in foreign languages the skills of compiling research instruments, analyzing and interpreting research data and formulating conclusions that are difficult for students to curate (Banevičiūtė & Kudinovienė, 2017).

Based on the findings of the research results above to streamline research, lecturers need to classify students' abilities in researching so that the research process is

effective. Classification based on the level of research skills of prospective teachers, namely low level, average level and high level (Cao et al., 2017). The methodology background and high-level professional skills of educators are closely related to the effectiveness of research (Cao et al., 2017). The need to create pedagogical constituents of research competencies that include: 1) The creation of a scientific research environment in the educational space of higher education institutions, which embodies the quality of research of future specialists; 2) The creation of positive student motivation in research activities on the basis of internal needs, interests; 3) Introduction of pedagogic technologies of the formation of research competencies in the conditions of educational and research activities; 4) High level of professional readiness of prospective specialists (teachers) to form research competencies through research activities (Ismuratova, Slambekova, Kazhimova, Alimbekova, & Karimova, 2018).

With the theory of links to discuss in particular the content about the preparation of teaching tools provided by lecturers in research methodology courses must have a clear link to market needs. The market needs in this context are that the results of student research can be implemented directly to solve problems that exist in society. As for the theory of match harmony which means that educational programs already related to these various interests must be equated with the number, level of quality, value that is required by changes in interests that will always occur in the constitution. In this context, the output of the learning outcomes of the research methodology, students must be able to conduct research indicated by research competence uptodately and based on current phenomena. Through link and match theory by exploring the experience of teaching lecturers and the experience of students learning in this research methodology course (Khasanah, 2020), it is hoped that it can obtain effective learning process intersections.

4 Conclusion

This study concludes that to improve research competence in the research methodology course of Building Engineering Education students in Higher Education, it is necessary to analyze the needs of both teachers and learners. Through extracting the experience of teaching lecturers and the experience of learning students can obtain information on learning needs. Through the analysis of learning needs from students and the fulfillment of learning needs from lecturers, a link and macth will be formed. The needs analysis includes: learning achievements, literacy technology, learning time, lecturer teaching experience, obstacles or deficiencies faced by lecturers, and final learning products. The implication of the results of this study is that with the analysis of needs in learning, research methodology can be used for curriculum development and pedagogical practices in higher education to design appropriate and effective learning models and evaluations. The results of this study can be adopted by adjusting the context according to the field of science being developed.

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