

Inquiry Learning Methods to Increase Student Motivation and Learning Outcomes

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ABSTRACT

Background: The current learning process has changed from teacher-centred learning (TCL) to student-centred learning (SCL). Therefore, innovative learning models are needed to improve student learning outcomes and motivation. This study aimed to measure the effect of inquiry learning methods on student motivation and learning outcomes.

Methods: This was a quasi-experimental approach with a pre-test and post-test control group approach. The samples were divided into 29 students as the intervention group and 29 students as the control group. The researcher used the MSLQ (Motivated Strategies for Learning Questionnaire) to measure learning motivation. Meanwhile, to assess student learning outcomes, researchers used an assessment using the MCQ (multiple-choice question) learning outcomes evaluation method. The study's results were analysed using the paired sample t-test with a value of 0.05.

Results: The study results in the intervention group showed the average value of the pretest learning motivation was 135.33, and the posttest-3 was 158.03, while the pretest-3 was 68.43 and the posttest-3 was 83.03. The results of the different tests for learning motivation were obtained by pre-posttest-1 p-value of 0.012, pre-posttest-2 p-value of 0.000, pre-posttest-3 p-value of 0.001, while the study results from pre-posttest-1 to pre-posttest-3 obtained p-value = 0.000.

Conclusion: There is an influence of inquiry learning method on the motivation and learning outcomes of Nursing Students.

Keywords: inquiry learning, learning motivation, learning outcomes

PRACTICE POINTS

- The use of inquiry learning increases the learning outcomes/knowledge of nursing students.
- Students who have been using an inquiry learning method have much better motivation than conventional ones.

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INTRODUCTION

To generate competent nursing personnel, the learning process cannot rely solely on teacher-centered learning (TCL). If students encounter an impediment or challenge throughout their learning process, the TCL method makes achieving competency more difficult¹. It is in line with² who claims that the influence of learning with traditional ways might cause people to be uninspired to participate in learning activities, affecting the learning results. During the learning process, instructors must develop learning motivation in students for the learning process to take place effectively. Student learning outcomes are determined by two primary elements: internal factors, which are characteristics that originate inside pupils, such as psychological and intellectual aspects. External influences are those that arise outside of the students' control, such as the learning process and methods employed.³

A feeling or emotion that drives students to be more engaged and serious about studying to improve the quality of their education.⁴ Lack of learning motivation can reduce students' accomplishment; thus, lecturers must boost student learning motivation by employing suitable learning methods to excite their enthusiasm for studying. The inquiry learning technique helps improve learning motivation and scientific curiosity.⁵ Inquiry learning is one pedagogical learning strategy that promotes learning motivation. Motivation is one of the psychological elements that assist nursing students achieve optimal learning outcomes.⁶

Inquiry learning is one of the most effective approaches in nursing education. This strategy delivers both difficulties and rewards to students by providing opportunity for the development of collaborative work abilities. It also assists students in gaining a better grasp of the material under study by strengthening literature search abilities, problem-solving skills, and the ability to deliver information to others. Furthermore, the inquiry learning-based learning method enables students to gain abilities in clinical evaluation and information collecting.⁷

The inquiry learning technique requires students to be more engaged in the classroom, with educators

or lecturers acting as facilitators. Inquiry learning improves student learning outcomes more than standard education.⁸ Inquiry-based learning has the potential to increase both learning outcomes and student happiness.⁹ Inquiry learning provides a unique learning experience and can spark interest in the learning process.¹⁰ Learning Inquiry improves scientific process skills and academic accomplishment more than traditional ways. Furthermore, students participate more energetically, making the learning process feel more enjoyable.¹¹

Preliminary research at a private nursing institution in NTT found that most lectures employed traditional learning methods or teacher-centered learning, therefore students were uninterested in the subject delivered, and the learning process felt tedious. As a result, it is vital to further investigate the inquiry learning technique in enhancing the motivation and learning outcomes of nursing students.

METHODS

Study Design

This study employed a quasi-experimental design with pre-test and post-test procedures, as well as a control group. The research sample was a student at the Faculty of Health, one of the private institutions in NTT.

Participants

The sample was randomly divided into two groups: 29 students for the intervention and 29 students for the control. Samples were collected using a random sampling approach. The drop-out criteria in this study were students who did not wish to engage in the study and students who did not follow all of the learning procedures in both the intervention and control groups.

Instrument

To assess learning motivation, the researcher employed the motivated strategies for learning questionnaire (MSLQ), which had been translated and validated on 30 students. The Cronbach alpha score for the questionnaire is 0.974. Meanwhile, researchers used

multiple-choice (MCQ) examinations to examine student learning results. Researchers collaborated with course instructors to generate the multiple-choice questions used to test students' knowledge levels. This MCQ has been validated by topic specialists, and an item review has been conducted. Learning evaluation was carried out after the learning process completed.

Intervention

The intervention was the use of the inquiry learning approach, whereas the control group used the conventional method (lecture). The intervention stages of the inquiry learning technique are categorized into five categories.¹² There are five tutorial types: exploration, self-directed learning, review, consolidation, and plenary. In the first step, students conducted exploratory activities to discover something new based on their prior understanding. The second level involves pupils learning independently based on the understanding they gained during the discovery stage. This signifies that after completing the investigation stage, pupils learned new ideas. In the final step, students presented their results from the self-directed learning process. In the fourth step, pupils consolidated their findings. Consolidation was carried out through group discussions and presentations. In the last stage students reflected both individual and group learning with a facilitator. In this stage reinforcement was given by the accompanying facilitator who provides guidance during the learning process.

Data Collection

The learning process included five meetings, each lasting two hours. In the control class, learning was carried out during three 2-hour meetings. To prevent bias, the intervention was presented first to the treatment group until it was finished, and then to the control group after the intervention group had completed their learning.

Data Analysis

Inquiry learning was divided into small classrooms of ten persons each. Each group was led by a facilitator. Before the learning process began, all

facilitators were trained. Students were separated into control and intervention groups and given a pretest before learning activities, followed by a post-test. The evaluation findings before and after learning were compared using the pair t-test. This research was authorized by the Ethics Committee of the University of Aisyiyah Yogyakarta No. 1488/KEP UNISA/III/2020.

RESULTS AND DISCUSSION

The characteristics of the research sample are explained in Table 1.

Table 1. Respondents' Characteristics Based on Gender and Age

Characteristics	Groups			
	Intervention (n=29)		Control (n=29)	
	n	%	n	%
Gender				
Male	4	13.8	5	17.2
Female	25	86.2	24	82.8
Age				
18-20	23	79.3	20	69.0
>20	6	20.7	9	31.0

Table 2 shows the pretest and post-test results for motivation before and after the intervention and control groups, respectively. The study's findings revealed that students' learning motivation rose before and after treatment in both the intervention and control groups. However, the treatment group had a greater average level of enhanced motivation than the control group ($p=0.000$). Based on these findings, it may be concluded that motivation is an essential component of learning. Students with great motivation will demonstrate their interests, participate in activities, and contribute to improve learning activities.

Table 2. The Average Score on Motivation in Intervention and Control Group

Motivation	Intervention (n=29)		Control (n=29)		P
	Min- Max	Mean±SD	Min- Max	Mean±SD	
Pretest	49- 78	64.59±8.33	49-62	57.28±3.18	0.000
Posttest	74-92	82.38±3.45	55-64	59.55±2.47	0.000

Table 3. Learning Outcome Based on Intervention and Control Group (n=58)

Learning Outcomes	Intervention (n=29)		Control (n=29)		P
	Min- Max	Mean±SD	Min- Max	Mean±SD	
Pretest	44-93	71.45±13.06	40-87	66.45±13.13	0.000
Posttest	76-98	86.1±6.99	49-98	76.28±12.30	0.000

Table 3 shows that both teaching techniques improve student learning outcomes. However, the increase with the inquiry technique is more than with the traditional approach. It is well established that both learning and learning may boost student motivation and learning results, but the intervention group shows a greater rise in both. The two groups differed considerably in terms of increased motivation and learning results.

Muhibbin³ explains that learning motivation is an effort made by a person through a process to acquire knowledge, and there is a behavior change, both cognitive, affective, and psychomotor, after interactions with the educational environment and family occur. Mulyasa.¹³ states that to achieve good performance, it is necessary to have motivation within the individual to carry out a task, learn, and work that has been done. This study is in line with the results of research obtained by Rahman and Ahmed,¹⁴ which states that learning motivation greatly affects the educational process and student achievement for the better. Mullama¹⁵ shows that the use of appropriate and student-centered learning methods can generate learning motivation. Sardiman.¹⁶ states that motivation can be said to be a series of efforts made by a person to want to do something, and if he does not like something, he will try to move the feeling of dislike. A person's learning motivation can be stimulated by factors that come from outside, including interesting learning media, so that this motivation grows within a person.

Research conducted by Chang et al.⁵ says that inquiry learning is one of the learning strategies that can increase learning motivation. This is supported by research by Hwang et al.,¹⁷ which states that inquiry-based learning can improve student learning outcomes, satisfaction, and motivation to learn; inquiry learning has a positive influence on learning motivation.¹⁸

Students in the control and intervention groups achieved better learning results after receiving learning materials. The control group did not show as much progress as the intervention group in terms of learning outcomes. According to Nybo and May8's research, an inquiry-based approach to learning improves student learning outcomes more than traditional instruction. According to Hwang et al.¹⁷, using the inquiry learning technique would improve student learning accomplishment since it is more efficient. Furthermore, studying utilizing the inquiry learning technique improves scientific process abilities and academic accomplishment more than traditional ways.¹⁹ Inquiry learning encourages students to participate more actively and makes the learning process more enjoyable.¹⁹ The results showed that the increase in student learning outcomes for those who took part in the learning process using the inquiry learning method was higher than for those using the conventional method. This difference in learning outcomes is a result of the learning process that has been passed. Changes in learning outcomes

are not only the result of the classroom learning process because there are several factors that can affect learning outcomes, which come from internal factors and external factors. Internal factors are factors that come from within students, for example, psychological and intellectual factors of students. While external factors are factors that come from outside the students themselves, including the learning process and the methods used.³ Learning methods are one of the components that affect learning outcomes. The intervention group and the control group used different learning methods so that the increase in learning outcomes was also different even though both groups experienced an increase in learning outcomes.

The regression test between the inquiry learning method and motivation shows a beta value of 0.866, so it can be concluded that this method can increase student motivation. Motivation is an act or process of giving something that causes someone to take an action or deed.²⁰ Inquiry-based learning is one of the important pedagogical strategies that fosters motivation to learn independently. Motivation is one of the important psychological concepts for students to achieve learning outcomes.²¹ Inquiry learning is a student-centered approach that can foster motivation to learn. In addition, it can also improve decision-making and problem-solving skills independently.⁶

The regression test between learning outcomes and inquiry learning obtained a beta value of 0.866, so it can be concluded that the learning method used is closely related to student learning outcomes. Sardiman¹⁶ said that 4 factors influence student learning achievement, namely: factor 1 consists of teaching and learning processes, methods, sources, and students; factor 2 consists of teaching materials, tools, motivation, and evaluation; factor 3 consists of interaction students with material, environment, and health; factor 4 is goals and talents.²² Therefore, students are strongly motivated to learn the material provided and use interesting learning media. The existence of a strong motivation will encourage students to learn and improve the learning outcome achieved. The method this research uses, which is uncommon yet exciting to utilize since it encourages student activity, is what makes it strong. Its main

weaknesses are this study's sample size and lack of confounding factor control. Future studies ought to control confounding variables, use a bigger sample size, and extend the duration of the intervention.

CONCLUSIONS

It can be concluded that the inquiry learning method can increase students' learning motivation. An increase in strong learning motivation can improve the students' learning outcomes.

RECOMMENDATIONS

Future study would benefit from additional samples, more time, and a broader range of materials. Before implementing a new approach, it is important to consider its feasibility, especially in terms of human resources.

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DECLARATION OF INTEREST

The authors declare that there are no competing interests related to the study.

AUTHORS' CONTRIBUTION

Sri Sundari – data analysis and publication manuscript.

Seftiani Utami – developing research proposal and collecting data.

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