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Research Article

Medical Students' Perception on the Ideal Lecturer Attributes in Problem-Based Learning on the Onion Model Theory

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ABSTRACT

Background: The success of Problem-Based Learning (PBL) is closely related to an effective discussion process. A good PBL will affect the success of the learning process. In addition, an effective teaching process from lecturers to students is very influential in producing a qualified doctor. Korthagen's Onion Model is a theory that emphasizes layered aspects in communication and can provide an in-depth view of the relationship between lecturers and students in the context of learning, such as PBL.

Aims: To identify what is the ideal lecturer attributes in Problem Based Learning based on the onion model theory according to medical faculty students.

Methods: This study uses a descriptive method. Respondents were selected using stratified random sampling techniques, resulting in 98 respondents. This study uses primary data with univariate analysis.

Results: From the 98 analyzed samples, it was found that level 1 students gave the highest average score on the identity aspect, with the following average scores: Level 1 (14.4167), Level 2 (13.1111), Level 3 (12, 6667), and Level 4 (12.7826). The behavioral aspect also showed similar results, with the highest score at Level 1 (14.0417) followed by Level 2 (13.5926), Level 3 (13.2083), and Level 4 (13.1739).

Conclusion: Most students of the Faculty of Medicine, Universitas Swadaya Gunung Jati, have a good perception of the attributes of ideal lecturers in Problem-Based Learning based on the Onion Model Theory.

1. Introduction

Effective medical education not only requires extensive knowledge and clinical skills but also critical thinking, problem-solving, and strong communication abilities. In an effort to enhance the quality of medical education, the Indonesian Medical Council (Konsil Kedokteran Indonesia, KKI) has stated that the appropriate curriculum model is the Competency-Based Curriculum (Kurikulum Berbasis Kompetensi) with the strategies of Student-centered, Problem-Based, Integrated, Community-Based, Elective or Early Clinical Exposure, Systematic/Structure (SPICES). One of the learning methods widely used is Problem-Based Learning (PBL).(Sukartini, 2021)

PBL is a learning process based on case studies that allow students to actively participate in the learning process. Through PBL, students can strengthen their clinical skills, enhance their understanding of the material, and develop critical thinking and problem-solving abilities. Teachers play a crucial role in designing and identifying complex and ambiguous problems to engage students. They act as mentors, facilitators, and trainers who support students working collaboratively in teams. In contrast to the conventional method with teacher-centered characteristics(Dolmans, De Grave, Wolfhagen, & Van Der Vleuten, 2005), in the PBL learning method with student-centered characteristics, lecturers no longer just convey information, but rather stimulate students to explore a problem and discuss it to find a solution. In this way, lecturers help students develop critical thinking and problem-solving skills, as well as improve the quality of learning and make students more capable and independent.(Ali, 2019)

However, many teachers still tend to use a teacher-centered approach and do not adequately facilitate student learning in PBL. They face difficulties in maintaining a student-teacher relationship due to hierarchical issues. Teachers with a teacher-centered perspective are assumed to experience challenges in adopting a student-centered learning approach. Potential reasons for teachers rejecting a student-centered approach include the inability of all faculties to meet the specific educational needs of teachers adequately. Instead of targeting aspects such as teachers' beliefs, identity, and mission, PBL focuses solely on teachers' competencies and behavior. (Lukas D. Leatemia, Susilo, & van Berkel, 2016)

The aspects influencing teachers' roles are derived from Korthagen's theoretical framework (*Korthagen 2004*), the Onion Model. This theoretical framework explains six levels that can influence an individual's perception. The structure resembles an onion slice, with levels ranging from the outermost environment to the innermost mission. Each level reflects the environment, behavior, competence, beliefs, identity, and mission. Ideally, all levels should be coherent and aligned. If this is not the case, teachers may experience difficulties in demonstrating effective behavior in the PBL process. The first layer, environment, refers to everything outside that a teacher may encounter during their teaching activities. The second layer, behavior, refers to a teacher's reactions to specific conditions and their actions as a teacher. The third layer, competence, refers to their knowledge and attitudes in teaching. The fourth layer, beliefs, refers to the values attached to their teaching practices. The fifth layer, identity, refers to how they define their professional identity as a teacher. Finally, the sixth layer, mission, refers to what they aim to achieve through their work.

Using the onion model theory to identify ideal teacher attributes according to student perceptions can help institutions evaluate student preferences regarding ideal teacher attributes and enhance institutional learning development by creating a more interactive learning environment. These ideal teacher attributes can also be used to determine effective teaching methods and serve as a tool for developing teachers as educators(Hatem et al., 2011).

The purpose of this research is to investigate the perception of medical students regarding ideal teacher attributes in Problem-Based Learning based on the onion model theory. The expected outcomes of this research will help institutions evaluate student preferences regarding ideal teacher attributes and enhance institutional learning development by creating a more interactive learning environment. Additionally, this research can serve as a tool for developing teachers as educators. By understanding better how teachers can play an effective role in PBL and how ideal teacher attributes can influence the quality of learning, we can improve medical education and create a generation of more capable and independent doctors.

2. Methods

Research procedures

This research was conducted at the Faculty of Medicine, Universitas Swadaya Gunung Jati Cirebon for 2 months from june to July 2024. The study utilizes a descriptive observational research method, designed to describe a state or problem observed in the field. The study uses a stratified random sampling technique, where the population is divided into strata, and random samples are selected from each stratum to estimate the population parameters, with the sample size calculated using the Slovin formula, resulting in a required sample size of 98 respondents. The sample obtained from student at academic stages, which is split into the educational level at the 1_{st} level was 24 students, the 2_{nd} level was 27 students, the 3_{rd} level was 24 students, and the 4_{th} level was 23 students. These students have met the inclusion criteria, namely active medical students at UGJ academic stage, willing to be research respondents by filling out informed consent and filling out 100% of the questions on the given questionnaire. As for the students who are unwilling to fill out informed consent on the questionnaire that has been given and incomplete in answering the questionnaire are excluded.

Measurements

The data collection method in this study involves the use of primary data. Primary data is collected through questionnaires to gather the perceptions of medical students and ideal attributes of teachers in Problem-Based Learning (PBL) based on the Onion Model Theory. The questionnaires used in this study were designed by the researcher by adapting the Student-centred Perspective of Teachers (SCPT) questionnaire from a previous study conducted by Leatemia and his team in 2023, with the questionnaire's validity and reliability already tested, and adapted into students perspective to better facilitate responses. Data was collected using an online questionnaire distributed to students using Google Forms, to measure medical students' perspective on ideal lecturer attributes based on onion model theory. The questionnaire consists of 17 questions with scoring scales of 17-68 and the results are divided into 2 levels of indicators: "Teacher-centered" category if the total questionnaire score is 17-34, "Student-centered" category if the total questionnaire score is 51-68. The questionnaire is divided into several questions representing each variable: Environment, Competencies, Beliefs, Identity, Mission, and Behaviour. Each variable is calculated using an average score to indicate a more favorable perception among students regarding lecturers' ideal attributes.

The data collection method in this study involves the use of primary data. Primary data is collected through questionnaires to gather the perceptions of medical students and ideal attributes of teachers in Problem-Based Learning (PBL) based on the Korthagen's Onion Model Theory. The questionnaires used in this study were designed by the researcher by adapting the Student-centred Perspective of Teachers (SCPT) questionnaire from a previous study conducted by Leatemia and his team in 2023, with the questionnaire's validity and reliability already tested, and adapted into students perspective to better facilitate responses. The data collection was conducted online using Google Forms, and the questionnaire consisted of 17 items designed to measure six key dimensions of lecturer attributes: Environment, Competencies, Beliefs, Identity, Mission, and Behavior. Each of these dimensions represents essential attributes that an ideal lecturer should possess in a PBL setting. For instance, Behavior reflects how lecturers facilitate discussions and engage students actively, while Competencies emphasize their ability to guide students through problem-solving processes. Similarly, Beliefs and Identity influence the lecturers' teaching philosophy and professional self-concept, which can shape the overall student experience in PBL. Meanwhile, Mission reflects the overarching goals that drive a lecturer's role in education, and Environment pertains to external factors influencing the learning process. These attributes were assessed to understand how students perceive the most effective teaching approaches in PBL, aligning with the Onion Model framework proposed by Korthagen (2004). Responses were recorded using a Likert scale, with total scores ranging from 17 to 68. The classification of lecturer attributes was divided into two categories: 'Teacher-centered' (17-34) and 'Student-centered' (51-68). Each dimension was analyzed using mean scores to determine students' perceptions of the most favorable lecturer attributes in a PBL setting.

Statistical techniques

This study used univariate analysis. Univariate analysis was conducted to describe the frequency distribution of each independent research variable, providing an overview of perspective medical students on ideal lecturer attributes based on onion model theory. Hypothesis testing is not used in this study because it is descriptive in nature. No inferential statistical tests were used because the main goal is to investigate students' opinions rather than determine the causes of the variables. The results are intended to provide a thorough descriptive understanding of the qualities that medical students value most in lecturers in PBL settings.

Ethical Clearance

The study was conducted following the research flow and was carried out after obtaining ethical approval from the Ethics Committee of the Faculty of Medicine, Swadaya Gunung Jati University (No. 70/EC/FKUGJ/IV/2024) and secured informed consent from all respondents.

3. Results

Respondent characteristics

Based on Table 1, the proportion of each gender shows that, out of 98 respondents, 28 are male, representing 28,6% of the sample population. In contrast, there are 70 female respondents, accounting for 77,4% of the population. This data indicates that there are more female students than male students who are willing to be in this study's population.

Table 1. Respondent Characteristic by Gender

Genders	n	%
Female	70	71,4
Male	28	28,6
Total	**98**	**100%**

Students' perspective

This study categorizes medical students' perspective on ideal lecturer attributes based on onion model theory into 2 levels of indicators: "student-centered" and "teacher-centered". Table 2 below indicates that a significant majority of students perceive that teachers in PBL have a student-centered perspective, with 94 (96%) students holding this view.

Table 2. Students' perceptions

Category	n	%
Student centered	94	96
Teacher-centered	4	4
Total	**98**	**100,0**

Students' perspective based of onion model theory

Table 3 shows the average scores of the Onion Model based on the attributes of environment, competence, belief, identity, mission, and behavior. The results indicate that the identity aspect has the highest average score (mean) at Level 1 (14.4167), Level 2 (13.1111), Level 3 (12.6667), and Level 4 (12.7826). This is followed by the behavior aspect at Level 1 (14.0417), Level 2 (13.5926), Level 3 (13.2083), and Level 4 (13.1739).

Additionally, Level 1 has the highest mean values across various aspect, including environment, competence, belief, identity, mission, and behavior, compared to Levels 2, 3, or 4.

Table 3. Average Score of Student Perceptions on Ideal Lecturer Attributes based of Onion model theory divided by education level

Aspect	level	Mean	Median	Std. Deviation	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Environment	Level 1	7.0417	6.0000	1.04170	6.6018	7.4815
	Level 2	6.7037	6.5000	1.10296	6.2674	7.1400
	Level 3	6.6250	6.5000	.92372	6.2349	7.0151
	Level 4	6.6522	7.0000	1.11227	6.1712	7.1332
Competencies	Level 1	10.5417	11.0000	1.38247	9.9579	11.1254
	Level 2	9.8519	9.0000	1.40613	9.2956	10.4081
	Level 3	9.6667	9.0000	1.40393	9.0738	10.2595
	Level 4	9.5652	9.0000	1.37597	8.9702	10.1602
Beliefs	Level 1	7.0417	7.0000	.90790	6.6583	7.4250
	Level 2	6.3704	6.0000	1.00568	5.9725	6.7682
	Level 3	6.7083	6.0000	1.08264	6.2512	7.1655
	Level 4	6.7826	7.0000	.79524	6.4387	7.1265
Identity	Level 1	14.4167	15.0000	1.66594	13.7132	15.1201
	Level 2	13.1111	13.0000	1.55250	12.4970	13.7253
	Level 3	12.6667	12.0000	1.76109	11.9230	13.4103
	Level 4	12.7826	12.0000	1.85758	11.9793	13.5859
Mission	Level 1	7.0000	7.0000	1.02151	6.5687	7.4313
	Level 2	6.3704	6.0000	.74152	6.0770	6.6637
	Level 3	6.6667	6.5000	.86811	6.3001	7.0332
	Level 4	6.5217	6.0000	1.12288	6.0362	7.0073
Behaviour	Level 1	14.0417	14.5000	1.98865	13.2019	14.8814
	Level 2	13.5926	13.0000	1.64689	12.9411	14.2441
	Level 3	13.2083	13.0000	1.69344	12.4933	13.9234
	Level 4	13.1739	12.0000	1.94591	12.3324	14.0154

From the data analysis in Table 3, it can be concluded that the perception of students is good because the majority of the mean values are higher than the median values, except for the aspects of environment at Level 4, trust at Level 4, and behavior at Level 1. The determination of boundaries in determining whether the perception is good among students refers to the median values due to the differences in the number of respondents for each level and the number of questions for each aspect, making it challenging to calculate evenly.

4. Discussion

Overview of Students' perspective

The student perspective on the teaching approach in Problem-Based Learning (PBL) reveals the majority's perception. As many as 94 out of 98 students (96%) believe that the instructors apply a student-centered approach, which focuses on active learning, student involvement, and personalized instruction. On the other hand, only 4 students (4%) think that the instructors use a teacher-centered approach, indicating that the teaching method is more traditional. This finding shows the alignment between the students' perceptions and the principles of PBL, which emphasize collaborative problem-solving and student-driven learning. The near-universal agreement on this matter indicates that students feel empowered and engaged in their educational experience, which is a key aspect of effective PBL implementation.

The results of this study align with the research conducted by Leatemia (Lukas Daniel Leatemia, Susilo,

Donkers, & van Merrienboer, 2023), which shows that student-centered learning approaches like PBL can enhance student engagement, motivation, and self-directed learning skills. However, it also highlights the need for careful implementation and support to overcome potential challenges. Incorporating Problem-Based Learning (PBL) that have a student-centered characteristics into the educational landscape requires a multifaceted approach. teacher must be adept at creating complex, real-world problems that challenge students to think critically and develop problem-solving skills. This involves designing triggers that are relevant, engaging, and aligned with the curriculum, ensuring that students are motivated to explore and learn through inquiry-based activities. Additionally, instructors need to foster a collaborative environment where students can share ideas, discuss solutions, and learn from one another. By doing so, PBL not only enhances academic achievement but also cultivates essential life skills such as critical thinking, communication, and teamwork. Ultimately, the success of PBL hinges on the ability of instructors to balance structure and flexibility, providing guidance while allowing students the autonomy to drive their own learning process.

Students' perspective based on Onion Model Theory

1. Environment

Based on the analysis of the environmental aspect, the highest average score is Level 1 (7.0417). From 98 samples, the majority of respondents agreed to each question. However, there were 7 students who disagreed that the institution regularly evaluates the implementation of the PBL curriculum through a specific unit. This research result aligns with the study conducted by Leatemia (Lukas Daniel Leatemia et al., 2023), which states that the environmental aspect refer to everything encountered during the learning process. The institution should also support the professional development of teachers by facilitating discussions on PBL implementation, providing adequate teaching and learning facilities, assessing their performance during PBL sessions, and balancing in giving praise and criticism

Evaluating PBL is necessary to determine how far students' attitudes and skills (soft skills) have developed after implementing the PBL method. This helps to understand the extent of their understanding and the extent of the application of the learning process. Additionally, evaluation is needed to identify the strengths and weaknesses of PBL in facilitating the optimal achievement of student competencies. The learning evaluation plays a role in identifying the necessary improvement programs to achieve the set learning goals. The evaluation system in learning, whether continuous or final, is typically developed based on several principles, including comprehensive, continuous, oriented towards achievement indicators, and aligned with the learning experience. (Mutiara, Suryani, Nurhidayah, & Hendrawati, 2018)

2. Competencies

Based on the analysis of the competency aspect, the highest average score is Level 1 (10.5417). Overall, from 98 samples, the majority of students agreed with each question. However, there were some students who disagreed that the competency aspect had been applied in the PBL learning process, such as in the statement "lecturer is able to provide practical examples in an easily understandable language during tutorial discussions." There were 13 students who disagreed, indicating that during discussions, there were lecturers who were not able to provide practical examples and clear language in the PBL process. This result aligns with Leatemia (Lukas Daniel Leatemia et al., 2023), which stated that the statements on the competency aspect refer to the lecturers' ability to stimulate and ask questions, as well as provide information to students during the PBL process. Lecturers must also consider themselves capable of facilitating PBL tutorial sessions by analyzing, observing, and providing feedback to students.

The role of lecturers as facilitators in the PBL learning process makes the PBL process self-directed. Group work serves as a stimulus for interaction. PBL is characterized by learning that takes place in small groups. In PBL, problems are discussed among small groups of students. In this collaborative learning environment, students learn from interacting with each other, for example, by explaining the material to other students and engaging in discussions. In PBL groups, students work together to develop collaborative explanations. Additionally, students learn to work together, which can help them become better collaborators. Ultimately, a

group is assumed to motivate students. Therefore, group tutorial work in PBL makes the PBL process a collaborative effort aimed at stimulating students towards the intended interactions, which are intended to have a positive effect on learning.(Dolmans et al., 2005)

3. Beliefs

Based on the analysis of the belifes aspect, the highest average score isLevel 1 (7.0417). Overall, from 98 samples, the majority of students agreed with both questions. However, there were 4 students who disagreed that a lecturer with an opinion, and 4 students who disagreed that a lecturer with an opinion, engaging in discussions about a topic, would help students learn how to gain a deep understanding from various perspectives. This study aligns with Leatemia (Lukas Daniel Leatemia et al., 2023), which stated that the statements on the trust aspect refer to lecturers needing to appreciate active learning by their students and the student-centered process.

The attribute of a lecturer as a facilitator, according to Harden et al. in 2000, influences the aspect of trust. The lecturer can serve as both a facilitator and a mentor to students, fostering confidence in a student-centered approach during Problem-Based Learning (PBL). A lecturer who has confidence in their students during PBL believes that these students will eventually be better prepared to become lifelong learners and possess professional skills in clinical fields rather than just theoretical knowledge.(Harden & Crosby, 2000)

4. Identity

Based on the analysis of the identity aspect, the highest average score is Level 1 (14.4167). Overall, from 98 samples, the majority of students agreed with both questions. However, there were 10 students who disagreed with the lecturers considering the needs of students during tutorial facilitation. This aligns with Leatemia (Lukas Daniel Leatemia et al., 2023), which states that lecturers who disagree with this aspect are those who have not fully accepted the student-centered learning approach.

When students fail to discuss the learning objectives relevant to the subject matter or remain silent during discussions, lecturers often feel compelled to provide brief explanations, which can shift the learning process to a teacher-centered approach. However, there are also situations that can encourage lecturers to identify themselves as learning facilitators, who are happy to help students overcome their learning challenges and are not hesitant to guide them.(Beijaard, 2019)

5. Mission

Based on the analysis of the mission aspect, the highest average score is Level 1 (7.0000). Overall, from 98 samples, the majority of students agreed with both questions. However, there were 12 students who disagreed with the statement that during discussions, lecturers do not feel disturbed by students who hold different opinions from theirs. The result aligns with Leatemia et al.'s research in 2022, which shows that in the aspect of mission, lecturers are required to possess skills such as patience, calmness, joy in teaching, and enthusiasm for their profession. In a subsequent study by Leatemia (Lukas Daniel Leatemia et al., 2023), it was identified that several situations can encourage lecturers to reflect on their mission, including what inspires them, the meaning, and the importance of their work. However, time constraints and other priorities can lower the motivation of lecturers to work as tutors.

Cecero (Cecero & Prout, 2014) interpreted the mission of the lecturer attribute as referring to personal and professional goals, such as concern for the whole person, simplicity, and humility. On the other hand, Leatemia (Lukas Daniel Leatemia et al., 2023), identified that several situations can encourage lecturers to reflect on their mission, including what inspires them and the significance of their work during their work.

6. Behaviour

Based on the analysis of the behavior aspect, the highest average score is Level 1 (14.0417). Overall, from 98 samples, the majority of students agreed with both questions. This aspect has the highest average score

compared to the other aspects. The results of this study align with Leatemia (Lukas Daniel Leatemia et al., 2023), which identified that the attribute of behavior requires lecturers to feel that they are promoting and stimulating constructive/active, independent, contextual, and collaborative learning during PBL activities among their students.

A lecturer as a clinician should provide an example of what should be learned. Students learn through observation and imitating the respected clinical instructors. Students learn not only from what their instructors say but also from what they do in their clinical practice and the knowledge, skills, and attitudes they demonstrate, "Setting an example." Medical lecturers are widely recognized as crucial in shaping, teaching, guiding, and assisting future doctors because this is one of the most effective teaching strategies available to clinical educators. Role modeling is one of the most powerful tools in transmitting values, attitudes, and thought patterns to students and influencing their career choices.(Harden & Crosby, 2000)

Limitation

This study's result should be taken with caution in mind due to limitations found during the entirety of the research. First, researcher only provides a descriptive overview and does not evaluate the relationship between each variable and did not explored other potentially relevant variables, there are still many other variables related to the onion model, such as demographic characteristics of instructors, age of students, length of students' education, etc.

5. Conclusion

Based on the research findings, show that students from various levels have positive perspectives regarding the ideal lecturer. The results also indicate that the majority of students perceive that lecturers have implemented a student-centered learning approach. The research could be used as evaluation for effective PBL learning in medical faculty as well as to improve the quality of educators for example, by conducting training, so that the learning objectives for students can be achieved. For future research, The results of this study are expected to serve as a foundational dataset that can be developed into more advanced research and can further develop this study using different variables or methods.

Conflict of Interest

There is no conflict of interest. Nothing to disclosure.

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