



# Attributes Descriptions among the Medical Lecturers in Implementing the Problem-Based Learning (PBL) Based on the Onion Model Theory

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## ABSTRACT

**Background:** Lecturer attributes influence how Problem-Based Learning (PBL) is facilitated. However, the descriptive profile of lecturer attributes based on the Onion Model Theory has not been previously documented at Faculty of Medicine, Universitas Swadaya Gunung Jati, Cirebon, Indonesia. Understanding these attributes is important to inform faculty development, reflective practice, and curriculum quality improvement.

**Aims:** To describe the attributes of medical lecturers in implementing the PBL based on the Onion Model framework.

**Methods:** This descriptive observational study involved 58 medical lecturers who serve as PBL tutors with varying teaching experience. Participants were selected using purposive sampling and completed the Student-Centred Perspectives on Teaching (SCPT) questionnaire. Responses were measured using a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree). Mean scores above 3 indicate high alignment with student-centred teaching attributes. Data were analysed using univariate descriptive statistics.

**Results:** All Onion Model aspects demonstrated mean scores above 3, indicating generally positive lecturer attributes toward student-centred PBL. The highest mean score was observed in the Belief aspect (3.70), followed by Behaviour and Mission (3.67), Competence (3.56), Environment (3.54), and Identity (3.53).

**Conclusion:** This study provides a descriptive profile of lecturer attributes in PBL implementation. The findings indicate that lecturers generally report student-centred teaching attributes across Onion Model domains. These findings describe lecturer characteristics and do not indicate effectiveness or causal impact on learning outcomes.

**Keywords:** *Problem-Based Learning; Student-Centred Learning; Lecturer Attributes; Onion Model Theory.*

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## 1. Introduction

Medical education comprises various teaching methods, and one of which is Problem-Based Learning (PBL), one of the most widely implemented methods in numerous medical faculties across Indonesia. A student-centered learning approach characterizes Problem Based Learning. The PBL curriculum, being student-centered, demands proficiency from students in critical knowledge, problem-solving skills, independent learning strategies, and the ability to participate in group discussions (Hussain, 2007; Lestari et al., 2019).

It takes careful execution to go from traditional approaches with a teacher-centered learning concept to student-centered learning. This transition affects various aspects of the learning process, particularly the role of lecturers. Lecturers sometimes focus on continuously delivering knowledge without providing opportunities for students to engage in discussions. Additionally, the role of lecturers is influenced by their diverse educational backgrounds and self-reflection practices, which are not always clear on what should be reflected upon to become a better educator. This, in turn, may impact their performance as educators and pose challenges to the sustainability of the PBL teaching method (Korthagen, 2017).

The six elements of Korthagen's theoretical framework environment, conduct, competence, beliefs, identity, and mission form the basis of factors influencing educators' roles for the factors affecting lecturers' roles. The Onion Model Theory divides these six factors into six levels that resemble onion rings. The inner layers can affect the outer layers and vice versa, as this model shows (from the outside to the inside). The first layer, environment, is all external material that a lecturer might encounter when doing their duties. The lecturer's behaviors as an instructor and their responses to circumstances are referred to as their conduct in the second layer. Competence, the third layer, describes their teaching-related knowledge and attitudes. The fourth layer, beliefs, refers to the values embedded in the lecturer throughout the teaching and learning process. The fifth layer, identity, refers to how lecturers define their professional identity as educators. Finally, the sixth layer, mission, refers to what they aim to achieve through their work student-centered (Korthagen, 2004).

The ability to professionally facilitate the implementation of student-centered learning methods for lecturers is supported by the literature of Dr. Lukas Daniel Leatemia, titled "Developing Student-centered Perspectives in PBL: How Teacher Profiles Reveal Educational Needs for Faculty Development Programmes." The findings of this study indicate that lecturers can play an influential role in PBL if they possess high perspectives in every aspect. Identifying the attributes that can influence the role of lecturers in the PBL process led the researcher to conduct a study on the description of medical lecturers' attributes in implementing PBL based on the aspects of the Onion Model (Leatemia et al, 2023).

Problem-Based Learning (PBL) is widely implemented in medical education in Indonesia and requires lecturers to adopt student-centred facilitation approaches. However, variation exists in how lecturers internalise and implement student-centred teaching principles. The Onion Model conceptualises teacher development across six interconnected levels: environment, behaviour, competence, beliefs, identity, and mission. While this model has been widely discussed theoretically, the descriptive profile of lecturer attributes based on Onion Model dimensions has not yet been documented at Faculty of Medicine, Universitas Swadaya Gunung Jati, Cirebon, Indonesia. Describing lecturer attributes is important because it can inform faculty development strategies, support reflective teaching practice, and provide baseline data for curriculum quality monitoring. To operate the Onion Model in measurable terms, lecturer attributes can be assessed using validated instruments such as the Student-Centred Perspectives on Teaching (SCPT) questionnaire. This study aimed to describe the profile of lecturer attributes in implementing PBL based on Onion Model dimensions at Faculty of Medicine Universitas Swadaya Gunung Jati, Cirebon, Indonesia.

## 2. Methods

This study used a descriptive observational cross-sectional design. The study was conducted at the Faculty of Medicine, Universitas Swadaya Gunung Jati, Cirebon, Indonesia, from May to July 2024. Inclusion criteria: Active PBL tutors, involved in tutorial facilitation during study period, Willing to complete questionnaire. Exclusion criteria: Lecturers not currently facilitating PBL, incomplete questionnaire responses. Data were collected using the SCPT questionnaire consisting of 19 items measuring six Onion Model domains. The instrument has demonstrated acceptable reliability and validity in previous studies. Likert scale scoring interpretation: 1.00–2.00 = Low alignment, 2.01–3.00 = Moderate alignment, 3.01–4.00 = High alignment. Univariate descriptive analysis was used because the study objective was to describe lecturer attribute profiles rather than test associations or causal relationships.

**Ethical Clearance:** Ethical clearance was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Swadaya Gunung Jati, with approval number 68/EC/FKUGJ/V/2024.

## 3. Results

A total of 58 lecturers participated in this study. Most respondents were aged 30–50 years (67.24%), female (72.4%), and had 5–10 years of tutoring experience (37.93%). Overall, lecturers demonstrated high alignment with student-centred attributes across all Onion Model aspects, with all mean scores above 3. The Belief domain showed the highest mean score (3.70), indicating strong acceptance of student-centred learning philosophy. Behaviour and Mission domains also showed high mean scores (3.67), suggesting strong alignment between facilitation practice and teaching purpose. Competence (3.56) and Environment (3.54) domains showed moderately high alignment, indicating generally supportive teaching skills and institutional conditions. The Identity domain showed the lowest mean score (3.53), suggesting that while lecturers demonstrate student-centred teaching behaviours, deeper internalisation of professional identity as student-centred educators may still be developing.

### Characteristics of Respondents

Table 1 shows that the age group dominating the sample was between 30-50 years, comprising 39 lecturers (67.24%). Meanwhile, 15 lecturers (25.86%) were under 30 years old, and 4 lecturers (6.90%) were above 50. The gender distribution revealed that female lecturers predominated, accounting for 42 individuals (72.4%), while male lecturers comprised 16 individuals (27.6%). Regarding tutor experience, 21 tutors (36.21%) had less than five years of experience, 22 tutors (37.93%) had five to ten years of experience, and 15 tutors (25.86%) had over ten years of experience.

**Table 1.** Frequency Distribution of Respondent Characteristics

Characteristic	Frequency	Percentage (%)
<b>Age</b>		
<30 Years	15	25.86
30-50 Years	39	67.24
>50 Years	4	6.90
<b>Gender</b>		
Male	16	27.6
Female	42	72.4
<b>Tutor Experience</b>		
<5 Years	21	36.21
5-10 Years	22	37.93
>10 Years	15	25.86
<b>Total</b>	<b>58</b>	<b>100</b>

## Problem-Based Learning (PBL) Implementation Based on the Onion Model

Based on Table 2, the frequency distribution for each aspect shows that the majority of lecturers answered "agree" and "strongly agree," with relatively high percentages for all six aspects. This indicates that lecturers understand the student-centered perspective in each aspect.

**Table 2.** Frequency Distribution of Onion Model Aspects

<b>Problem-Based Learning (PBL)</b>	<b>1 STS</b>	<b>2 TS</b>	<b>3 S</b>	<b>4 SS</b>	<b>Percentage %</b>
<b>Environmental Aspect</b>					
My institution facilitates discussions with all lecturers to routinely review PBL (concepts, small group discussion processes, etc.)	1	1	27	29	86.21
Through a dedicated unit, my institution routinely assesses how well the PBL program is being implemented.	0	1	19	38	90.95
<b>Behavioral Aspect</b>					
I encourage students to construct summaries using their own words.	0	0	22	36	90.52
I encourage students to develop connections between concepts discussed in tutorial groups.	0	0	18	40	92.24
I encourage students to apply their knowledge to the problems discussed	0	0	17	41	92.67
I encourage students to relate learning objectives to their prior knowledge	0	0	20	38	91.38
<b>Competence Aspect</b>					
I am capable at igniting class discussions through formal and casual communication.	0	1	24	33	88.79
To help students better understand the activities assigned, I can pose open-ended questions.	0	1	23	34	89.22
During lesson talks, I can offer relevant examples in language that is easily understood.	0	0	25	33	89.22
<b>Belief Aspect</b>					
Learning in small group systems encourages students to learn	0	1	17	40	91.81
Students learn how to obtain a deeper knowledge from multiple views when they engage in group discussions about a topic.	0	0	16	42	93.10
<b>Identity Aspect</b>					
I enjoy assisting students in solving their learning challenges	2	3	20	33	86.21
I consider students' needs when facilitating tutorial discussions	1	0	31	26	85.34
It is my goal to assist students in putting what they have learned into practice in their daily lives.	1	1	21	35	88.79
It is imperative that I cultivate a compassionate rapport with students during tutorial sessions.	0	2	22	34	88.79
When I can assist students who are having trouble learning, I feel fulfilled.	2	1	15	40	90.09
For me, the most crucial thing is to establish a classroom culture where students feel appreciated and cherished.	0	0	22	36	90.52
<b>Mission Aspect</b>					
I'm up for fresh concepts and adventures.	0	0	13	45	94.40
I don't find it bothersome when students have viewpoints that are different from mine during conversations.	1	1	20	36	89.22

**Univariate analysis**

Based on Table 3, the average scores for each aspect of the Onion Model were obtained. The highest average score was found in the Belief aspect (3.70), followed by the Behavior and Mission aspects (3.67), Competence (3.56), Environment (3.54), and Identity (3.53).

**Table 3.** Average Score of the Onion Model

Onion Model	N	Mean	Std. Deviation
Environment	58	3.54	.581
Behaviour	58	3.67	.472
Competence	58	3.56	.520
Belief	58	3.70	.479
Identity	58	3.53	.628
Mission	58	3.67	.540

**4. Discussion**

This study found that medical lecturers at Universitas Swadaya Gunung Jati Faculty of Medicine generally demonstrate student-centred teaching attributes across all Onion Model dimensions. A key contribution of this study is providing the first descriptive baseline profile of lecturer attributes based on Onion Model layers at this institution. This baseline may support faculty development planning and structured reflection training. The relatively lower identity score suggests that although lecturers demonstrate student-centred teaching behaviours, internalisation of professional identity as facilitators may still be evolving. In the PBL context, this may influence confidence in facilitating student autonomy and managing group dynamics. Because this study used self-reported descriptive data, findings represent perceived lecturer attributes rather than objective teaching performance or causal influence on student learning outcomes.

The descriptive baseline obtained in this study may serve as an institutional reference for designing faculty development programs, particularly those aimed at strengthening tutors’ deeper reflective capacities. (Erlangga et al., 2025) highlighted that ideal PBL tutors are not only evaluated by facilitation skills, but also by the extent to which their professional identity and mission align with student-centred learning values.

The Onion Model illustrates various levels or layers, indicating that lecturers must engage with the inner layers to discover deeper meaning during learning. Lecturers are not only required to reflect on what happens in their classroom (environment aspect) and what actions they should take (behavior aspect) but also on their beliefs about the situation (belief aspect) and on the question of what kind of teacher they wish to be and what goals they have (mission aspect). Lecturers must also consider whether they genuinely care about connecting with their students, even reaching the dimension of the student's feelings and desires (competence and identity aspects) (Korthagen, 2017; Erlangga et al., 2025).

When all the layers of the Onion Model are in alignment, a lecturer's qualities become more successful that is, their inspirations correspond with their role definition, their actions and thought processes during instructional circumstances, and their surroundings. This means that all of the onion model layers should ideally be included in reflection. This kind of in-depth contemplation is known as core reflection, and it has a big influence on productive teaching and learning practices. Core reflection explains that a lecturer's quality comes from within, such as mission, identity, and belief aspects, while competence, behavior, and environment aspects are influenced by external factors. This is aligns with the relationships outlined in the Onion Model: a lecturer's competence, such as their ability to consider different learning styles, can be influenced by core qualities (mission aspect), such as curiosity or commitment to teaching, indicating that influence occurs from the inside out (Korthagen, 2005).

Based on the study conducted by Johnson B, Stevens JJ, and Zvoch K, environmental aspects such as the availability of institutional resources, including adequate teaching materials and funding to support PBL methods like comfortable classrooms served as institutional support for lecturers in implementing PBL. In addition, PBL training provided to lecturers served as an opportunity for professional development as PBL facilitators.

Curriculum evaluation also played a role in assessing the extent to which PBL methods had been effectively implemented within the institution. These findings were in line with the results of the analysis of the environmental aspect variable, which showed an average score of 3.54. The questionnaire results indicated that many lecturers agreed with the statements related to the environmental aspect in each learning process, while two lecturers disagreed and one strongly disagreed (Leatemia *et al.*, 2023).

In a study conducted by Korthagen F, lecturers' behavior in the learning process was the result of a complex interaction between cognitive, affective, and motivational aspects, including positive emotions such as satisfaction and joy, as well as negative emotions like frustration. To improve lecturer quality, institutions needed to consider their thoughts, feelings, and motivations, although this was challenging especially when the curriculum remained teacher-centered. The present study showed an average score of 3.67, suggesting that lecturers perceived themselves as applying the behavioural aspect effectively in the implementation of student-centred learning (Korthagen F, 2004).

According to the research conducted by Leatemia LD, the belief aspect referred to what lecturers believed about the teaching and learning process. In the present study, the Belief aspect showed the highest mean score (3.70), indicating that lecturers strongly support the philosophy of student-centred learning in small-group PBL settings. This suggests that most lecturers believe PBL encourages deeper understanding through discussion and multiple perspectives (Leatemia *et al.*, 2024).

These lecturer beliefs and facilitation attributes are important because they may influence students' engagement in PBL tutorials, particularly in fostering self-directed learning readiness. Similar findings were reported by (Lestari, 2019), who demonstrated that self-directed learning readiness was significantly associated with better academic performance in PBL, whereas anxiety was not a determining factor. This highlights that students' preparedness for independent learning may play a greater role in successful tutorial participation.

Furthermore, (Norsaputra & Johansyah, 2017) found that although students generally showed positive responses during PBL activities, such responses alone had limited impact on achievement. Therefore, other contributing factors, such as cognitive skills, learning readiness, and effective tutor facilitation, may play a more substantial role in supporting student learning outcomes.

The Identity aspect showed the lowest mean score (3.53) compared with other Onion Model domains. This may indicate that although lecturers demonstrate student centred teaching behaviours, the deeper internalisation of their professional identity as facilitators in PBL may still be developing. This was consistent with the analysis results of the identity aspect, which showed an average score of 3.53, indicating that only some lecturers were able to apply the identity aspect in the implementation of student-centred learning (Leatemia *et al.*, 2023).

The Mission aspect obtained a high mean score (3.67), suggesting that lecturers have a strong teaching purpose and openness to diverse student viewpoints during tutorial discussions. This reflects positive alignment with the student-centred goals of PBL facilitation. This is aligned with the results of the present study, in which the mission aspect received a score of 3.67, indicating that most lecturers were able to apply the mission aspect in the implementation of student-centred learning (Leatemia *et al.*, 2023).

This study used self-reported questionnaire data, which may introduce social desirability bias. Therefore, results should be interpreted as perceived lecturer attributes rather than objective measures of teaching performance. Additionally, the use of descriptive analysis limits inference regarding relationships between variables.

## 5. Conclusion

This study describes the profile of lecturer attributes in implementing PBL based on Onion Model dimensions. Lecturers generally report high alignment with student-centred teaching attributes across all domains. This study describes lecturer characteristics and does not evaluate teaching effectiveness or causal impact on learning outcomes. Findings may inform faculty development planning, reflective teaching practice, and lecturer training using the Onion Model framework.

## Recommendation

Future research should examine on the relationship between the length of experience of medical lecturers in PBL learning and each aspect of the Onion Model. In addition, further research should be conducted on lecturers' perceptions of the reflection of medical lecturer attributes based on aspects of the Onion Model.

## Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper. All affiliations, financial relationships, and other possible sources of bias have been transparently disclosed. The research was conducted independently, without influence from any external parties, organizations, or institutions that could have affected the objectivity, interpretation, or conclusions drawn from the study. Additionally, no competing interests, either financial or non-financial, exist that could compromise the integrity of the research process or the validity of the findings presented.

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