

A PEEK INTO MEDICAL STUDENTS' PERCEPTIONS TOWARDS LEARNING ENVIRONMENT IN BASIC MEDICAL SCIENCES BLOCK

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Submitted: 03 Mar 2021, Final revision from authors: 07 Sep 2021, Accepted: 12 Oct 2021

ABSTRACT

Background: *Biology is one of the cornerstones of studying medicine. It is imperative for medical students to get a grasp of it before further proceed to advanced medical sciences. Learning and comprehending the subject will help medical students further in their studies. The learning environment is one of the major factors that determine the success of a learning process. This study aimed to assess student's perception of the learning environment on the biology medicine block, as one of the basic medical sciences blocks given in the first semester in the Faculty of Medicine, Universitas Sriwijaya.*

Methods: *A descriptive observational study with a cross-sectional design on 221 second-year medical students that have undergone the biology medicine block. Assessment is done using Dundee Ready Education Environment Measure (DREEM) questionnaire.*

Results: *A total of 221 respondents, 67.4% have a good perception of learning, a very good perception of lecturers 115 respondents (52%), a good academic achievement of 62%, a perception of a good learning atmosphere is 72% and a perception of a good environment is 73.8%.*

Conclusion: *The majority of respondents stated good perception among all categories.*

Keywords: *environment evaluation, biological block, DREEM, medical student evaluation*

ABSTRAK

Latar belakang: Biologi adalah salah satu landasan mempelajari kedokteran. sangat penting bagi mahasiswa kedokteran untuk memahaminya sebelum melanjutkan ke ilmu kedokteran tingkat lanjut. Mempelajari dan memahami subjek biologi akan membantu mahasiswa kedokteran lebih lanjut dalam studi mereka. Lingkungan pembelajaran merupakan salah satu faktor utama yang menentukan keberhasilan suatu proses pembelajaran. Penelitian ini bertujuan untuk menilai persepsi mahasiswa terhadap lingkungan belajar pada blok biologi kedokteran, sebagai salah satu blok ilmu kedokteran dasar yang diberikan pada semester pertama di Fakultas Kedokteran Universitas Sriwijaya.

Metode: Penelitian ini adalah deskriptif observasional dengan rancangan potong lintang terhadap mahasiswa program pendidikan dokter angkatan 2019 yang dilakukan pada Agustus 2020 hingga November 2020 menggunakan kuesioner Dundee Ready Education Environment Measure (DREEM).

Hasil: Total 221 responden, 67,4% memberikan persepsi terhadap pembelajaran yang baik, persepsi terhadap dosen sangat baik 115 responden (52%), hasil capaian akademik yang baik sebesar 62%, persepsi terhadap suasana belajar yang baik sebanyak 72% dan persepsi terhadap lingkungan yang baik sebanyak 73,8%.

Kesimpulan: Mayoritas responden penelitian memberikan persepsi yang baik terhadap seluruh kategori.

Kata kunci: evaluasi lingkungan belajar, blok biologi, DREEM, evaluasi mahasiswa kedokteran

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PRACTICE POINTS

- This study identified students' perception of the learning environment in one of the basic medical sciences blocks.
- DREEM questionnaire is a potential and prospective instrument to evaluate the learning environment in all stages of courses in the medical faculty, including the basic medical sciences blocks.
- DREEM questionnaire offered insight on which areas of the learning environment need to be improved.

INTRODUCTION

Faculty of Medicine Universitas Sriwijaya in Palembang is one of the oldest medical faculty in Indonesia. Its undergraduate program consists of 30 blocks, where Biology is the third block in the first semester. Biology medicine has long been approved as one of the basic medical sciences, where it explores living creatures and life processes in general, including the basic unit of inheritance.^{1,2} Thus it is imperative for the students to get a grasp of it before further proceed to advanced medical sciences.

Various factors could affect the effectiveness and the outcome of a learning process, where a learning environment is one of the pivotal affecting factors.³ Learning environment is known to be connected to the learning process of the students. It can be classified as physical environment, and social environment.⁴

Rukban *et al*⁵ in their study concluded that the environment during the learning process had affected the students' attitude, knowledge, skill, and achievement. World Federation of Medical Education (WFME)⁶ even stated that the learning environment is an indicator of improved quality of education. One of the ways to evaluate the quality of the learning environment is through assessing the students' perceptions.⁷

The DREEM is a validated assessment tool for evaluating the educational environment of healthcare professionals. It has been utilized in a variety of contexts around the world, primarily with medical students, but also with other healthcare groups.⁸ *Dundee Ready Education Environment Measure* (DREEM) is one of the recommended tools to evaluate the medical education learning

environment from students' perceptions, particularly from medical students.⁵ It has been used to identify weaknesses in the curriculum, and also to determine the impact of new curriculum interventions, along with students' understanding.⁹

An earlier study in the Faculty of Medicine, Jambi University showed that 80 percent of the students have a positive perception regarding the learning environment. It also concluded that there is a significant relationship between student's perceptions about the learning environment with learning strategies used by medical students.¹⁰ In addition, a study from a medical school in Mataram University, concludes that students' perceptions about the learning environment affect students' participation and academic performance.¹¹

To date, there has been no study in Indonesia that is focusing on the evaluation of the learning environment in basic medical science blocks, like biology medicine. Thus this study aims to determine student perceptions of the learning environment in biology Medicine, block three in the Faculty of Medicine, Universitas Sriwijaya.

METHODS

This study is a descriptive observational study with a cross-sectional design on the second-year medical students in the faculty of medicine, Universitas Sriwijaya who have undergone block three in their first year. As many as 221 participants enrolled in the study. This study has been approved by the Ethical Board Committee of Faculty of Medicine, Universitas Sriwijaya, No. 004-2020.

The validity of the DREEM instrument was tested twice on 3 and 7 September 2014 using the Statistical

Product and Service Solutions (SPSS) version 20.0 for Windows program was done in the Sebelas Maret University, in Surakarta. The first validity test was conducted on 35 respondents who were not the research sample but were medical students of Sebelas Maret University. There are 14 invalid items in this test. Then the sentence revision was carried out on the fourteen invalid items and the second instrument validity test was on 7 September 2014 to 35 respondents who were different from the first validity test respondents. From the results of this second validity test, the items that were still invalid were excluded from the instrument with consideration of other items that can still represent the domain or sub-scale on each questionnaire. After being eliminated, 33 valid items were found on the DREEM questionnaire.

A translated and validated DREEM instrument in Bahasa Indonesia was given out to the participants from August 2020 to November 2020. The instrument consisted of 33 questions, divided into five segments where each segment evaluated different aspects of the learning environment: student perceptions of learning, student perceptions of lecturers, student perceptions of academic achievement, student perceptions of the learning atmosphere, and student perceptions of the social environment.

The questionnaire was originally developed at the University of Dundee and has been validated as a universal diagnostic inventory for assessing the quality of the educational environment of various institutions. Internal consistency and reliability for this study were 0.735 using Cronbach's alpha and using an unpaired T-test to perform comparisons. This questionnaire can be used to prove errors that occur, a database built in different medical faculties.¹²

This questionnaire has been used by professional education for 20 years globally. The total questions in the DREEM questionnaire are 50 using a Likert scale consisting of 5 answer points, namely 0-4 with interpretation, namely 4 = strongly agree, 3 = agree, 2 = doubt, 1 = disagree, 0 = strongly disagree. The higher points interpreted the more positive the student's perception is.

The statistical data analysis was done using SPSS software. The results are shown in tables and narrated.

RESULTS AND DISCUSSION

A total of 221 medical students participated in this study. They are in their second year in the Faculty of Medicine, Universitas Sriwijaya. One hundred and forty-eight participants are female (67.0%), while the rest of 73 participants are male (33.0%).

Most of the students have a good perception of the learning environment in block three. Most of the students showed a good and very good perception in all five segments, presented in table 1. Student perception of learning has the highest number of participants, agreeing that the learning in block three was good. Although there were still 15 participants (6.8%) who had a bad perception of learning.

Among the five segments, student perception of lecturers is the only segment that has no bad or very bad perception. Fifty-two percent (115 participants) stated that they have a very good perception of their lecturers, and forty-eight percent (106 participants) stated that they have a good perception of the lecturers.

On the other hand, the only segment that showed a very bad perception was the student perception of the social environment (0.5%).

Table 1. Frequency distribution of students' perceptions evaluation results

Variable	Frequency	
	n	%
Sex		
Male	73	33.0
Female	148	67.0
Students' perceptions of learning		
Very Good	57	25.8
Good	149	67.4
Bad	15	6.8
Very Bad	0	0
Students' perceptions of lecturers		
Very Good	115	52.0
Good	106	48.0
Bad	0	0
Very Bad	0	0
Students' perceptions of academic achievement		
Very Good	77	34.8
Good	137	62.0
Bad	7	3.2
Very Bad	0	0

Variable	Frequency	
	n	%
Student perceptions of the learning atmosphere		
Very Good	51	23.1
Good	160	72.4
Bad	10	4.5
Very Bad	0	0
Students' perceptions of the social environment		
Very Good	46	20.8
Good	163	73.8
Bad	11	5.0
Very Bad	1	0.5

As seen in Table 1, the majority of the students have a good perception of learning. According to Yusoff et al¹³, a good learning process can be assessed from the material provided; whether it is understandable or not, and also by the media used during the learning process, whether it is adequate or not. Another study by Anisah in 2016 also showed a good student perception of learning.¹⁴ It is believed due to the learning method being used, which is the problem-based learning method. The problem-based learning method is the common method used in the faculty of medicine that helps encourage medical students to engage and actively participate. The same thing most likely also applies to what is found in the learning environment of block three in the faculty of medicine, Universitas Sriwijaya.

In the next segment, which is the student perception of lecturers, as many as 115 participants (52.0%) had a very good perception, and 106 participants (48.0%) had a good perception. There was no bad and very bad perception on this segment. The result is similar to other studies as well, where a study by Anisah and also by Puspita^{11,14} showed a good perception. Lecturers or teaching staff are expected to have good teaching skills and teaching strategies. They are also expected to set an example of how to behave to

their students.^{11,15} According to Devine et al¹⁵, good teaching is related to the ability of the lecturer, his personality, and how his interpersonal relationship with students. It is further concluded by Saputra¹², that lecturer behavior in teaching can both, directly and indirectly, influence students' achievement.

Grade Point Average (GPA) is often considered as the indicator of a successful learning process. GPA is one of the benchmarks for a student's academic achievement. In this study, 137 students (62.0%) had a good perception of academic achievement. Only 7 students (3.2%) had bad perceptions. There are several factors known to affect GPA. The most common variables that could help students reach a better GPA are the inner motivation for achievement, writing down the goals or targets of the learning before carrying it out, and skimming before giving material so that they can remember better, and take notes during lectures.¹²

When it comes to student perception of the learning atmosphere, 160 participants had a good perception (73.4%), 51 participants had a very good perception (23.1%) and 10 participants (4.5%) had a bad perception. Several factors can affect the learning atmosphere. It includes good classroom arrangements such as benches arranged in rows, equipment, and furniture that is adjusted to an ergonomic level such as a table that is not too low so that students do not have to bend, and also good lighting with adequate ventilation.¹⁰

One study showed that the social environment is closely related to an individual's academic performance.¹⁶ In this study, 163 students (73.8%) had good perceptions, 46 students had very good perceptions (20.8%) as many as 11 students had bad perceptions (5.0%) and 1 student has a very bad perception (0.5%). This study also found that parents who understand their role in guiding children in education will be a supporting factor for children's progress in terms of academic performance.

Table 2. Score Differences between Item.

Domain	Item	Mean \pm SD
SPL	Learning activities often stimulate students to learn.	3.13 \pm 0.63
	Learning activities are well focused.	3.06 \pm 0.70
	Learning activities help me develop self-confidence	2.95 \pm 0.61
	Learning time is very effective	2.76 \pm 0.74
	I clearly understand the learning objectives for each learning activity	2.69 \pm 0.75
	Learning activities encourage me to be active	2.78 \pm 0.71
	Learning activities often stimulate students to learn.	2.70 \pm 0.76
SPT	The lecturers are knowledgeable	3.47 \pm 0.56
	Lecturers have effective communication skills	3.26 \pm 0.58
	Lecturers provide feedback to students well	3.14 \pm 0.63
	Lecturers provide constructive criticism in learning activities	3.17 \pm 0.58
SASP	The lecturer provides a clear example	3.14 \pm 0.58
	I feel I am well prepared to support my career as a doctor	3.05 \pm 0.66
	I can remember everything I need	2.35 \pm 0.79
	During my learning activities, I have learned a lot about empathy in my profession.	3.25 \pm 0.54
SPA	I feel like my problem-solving skills are developing well	3.05 \pm 0.58
	Most of the material I have to study is relevant to my career in the world of health	3.29 \pm 0.60
	The atmosphere feels comfortable during learning activities.	2.91 \pm 0.77
	Learning activities are well scheduled.	2.74 \pm 0.81
	Cheating is still a problem in learning activities.	2.16 \pm 1.13
	The lecture atmosphere was comfortable.	2.98 \pm 0.69
	There is an opportunity for me to develop interpersonal skills.	3.06 \pm 0.57
	I feel comfortable being with my friends during the learning sessions.	3.23 \pm 0.65
	During the tutorial, the atmosphere is relaxed.	2.72 \pm 0.85
	I can concentrate well.	2.73 \pm 0.71
	Learning activities feel more fun than stressful things.	2.46 \pm 0.89
	The atmosphere of learning activities motivates me as a learner.	3.04 \pm 0.62
	I can ask about anything I want	2.93 \pm 0.76
SSSP	There is a good support system for students who experience obstacles in learning	2.70 \pm 0.75
	I rarely feel bored during lectures	1.94 \pm 0.90
	I have good friends on campus.	3.24 \pm 0.58
	My social life is fine.	3.20 \pm 0.62
	I rarely feel lonely.	2.71 \pm 0.92

Table 2 shows the difference in the per-item score, each of which is interpreted as follows:

- Items with a mean score of ≥ 3 were perceived as positive
- Items with an average score between 2 and 3 can be considered an aspect that could be improved
- Items with a mean score of ≤ 2 are problem areas.¹⁷

Based on the indicators of Students 'Perception of Learning (SPL) or students' perceptions of learning, items that are perceived positively are "I am compelled to participate during learning activities",

"Learning activities often stimulate students to learn" with an average score of ≥ 3 . Items that were considered as aspects that could be improved

were “Well focused learning activities”, “Learning activities helped me develop self-confidence”, “Learning time is very effective”, “I clearly understand the learning objectives of each learning activity”, “ The learning activities encouraged me to be active ”with an average score of between 2 and 3. The results on the indicator of student perceptions of the learning process obtained the highest score on the statement “I am compelled to participate during learning activities.” The lowest score is obtained on the statement “learning time is very effective.” This shows that learning has been centered on students, as seen from student motivation to participate during learning activities. Effective learning is a learning process that allows the individual to develop prior knowledge. The effectiveness of a learning process can be achieved by interacting with working in groups and each group member studying different topics so that they can develop the knowledge of each individual.¹⁸

Based on the indicators of Students ‘Perception of Teacher (SPT) or students’ perceptions of lecturers, items that are perceived positively are “Lecturers are knowledgeable lecturers”, “Lecturers have effective communication skills”, “Lecturers provide feedback to students well”, “Lecturers provide constructive criticism in learning activities “;” Lecturers provide clear examples “and there are no items that can be fixed or problematic areas. On the indicator of perceptions of lecturers, the highest score is found in the statement “Lecturers who fill lectures are knowledgeable.” The lowest score on the statement “The lecturer provides a clear example.” This shows that the teaching staff has carried out their role well, although they are still lacking in providing examples to make it clearer for the students. A study conducted at Stanford University showed that the influence of teachers who are competent and understand their fields has a greater influence on student academic performance than students’ backgrounds.⁵ Based on indicators Students’ Academic Self Perception (SASP) or students’ perceptions of academic achievement, items that are perceived positively are “I feel I have been well prepared to support my career as a doctor”, “During my learning activities I have learned a lot about empathy in my profession”, “I feel that my ability to solve my problem is developing

well ”;“ Most of the material I have to study is relevant to my career in healthcare ”with an average score of ≥ 3 . The item that was considered as an aspect that could be improved was “I can remember everything I need” with an average score of between 2 and 3. On the indicator of students’ perceptions of academic achievement, the highest score was found in the statement “Most of the material I have to study is relevant to my career in the world of health.” The lowest score on the statement “I can remember everything I need.” Given the broad material being taught, students felt that they have not been able to remember everything they need. This can be overcome by eliminating irrelevant and outdated material coupled with continuous simulations which can make it easier for students to remember important things regarding their profession as a doctor.¹⁹

Based on the indicators of Students ‘Perception of Atmosphere (SPA) or students’ perceptions of the learning atmosphere, items that are perceived positively are “There is an opportunity for me to develop interpersonal skills”, “I feel comfortable being with my friends during learning sessions”, “The atmosphere of learning activities motivates me as a learner” with an average score of ≥ 3 . Items that were considered as aspects that could be improved were “The atmosphere feels comfortable during learning activities”, “Learning activities are well scheduled”, “Copying is still a problem in learning activities”, “The atmosphere of the lecture is comfortable”, “During the tutorial the atmosphere is relaxed”, “I can concentrate well.” On the indicator of students’ perceptions of the learning atmosphere, the highest score was found in the statement “I feel comfortable being with my friends during learning sessions.” The lowest score on the statement “Cheating is still a problem in learning activities.” Based on these results, this is in line with research conducted by Halonen et al¹⁹ which stated that cheating often occurs in higher education. As an effort to reduce cheating behavior, the solution proposed is to create a different block scenario each year so that students do not use the previous report.¹⁷

Based on the indicators of Students ‘Social Self Perception (SSSP) or students’ perceptions of the social environment, items that are perceived

positively are “I have good friends on campus,” “My social life is fine” with an average score of ≥ 3 . Items that were considered as aspects that could be improved were “There is a good support system for students who experience learning barriers,” “I rarely feel lonely” with a mean score of between 2 and 3. Items that represent problem areas are “I rarely feel lonely. bored during the lecture with an average score of ≤ 2 On the indicator of students’ perceptions of the social environment, the highest score was obtained on the statement “I have good friends on campus.” The lowest score was on the statement “I rarely felt bored during college.” The social environment is an important support system for students to stimulate the development of an effective learning process.¹⁶ The majority of respondents considered that they had good friends on campus who interpreted a good support system around students. However, the results of the study show that students often feel bored during lectures. Boredom during lectures can be overcome by providing interactive lecture materials by giving questions to students, giving material using pictures and videos, or by giving quizzes on the beginning and end of lectures to find out how good the information obtained by students.¹⁸

This research bestows an insight into the learning environment in block three as one of the basic medical sciences blocks as perceived by the students of the faculty of medicine, Universitas Sriwijaya. The Dundee Ready Educational Environment Measure (DREEM) instrument used in the study helped identify and assess students’ perceptions of various aspects in the learning environment, while at the same time provided information on which aspects needed improvement. These data would help the faculty members evaluating the current curriculum, thus creating a better learning environment from the evaluation.

Despite the informative results, this study does not dig deeper into the underlying reasons why the students perceive that way. Such data are needed to give a better understanding. This kind of information would be beneficial for the faculty members to improve the learning environment. Qualitative studies with focus group discussion

or in-depth interviews might help to identify and clarify the reasons.

CONCLUSION

Medical students in the faculty of medicine Universitas Sriwijaya had a good perception of their learning environment on block three biology medicine as one of the basic medical sciences blocks.

RECOMMENDATION

Although the learning environment in Block 3, Faculty of Medicine, Universitas Sriwijaya was found to be positive, there are still various issues that can be improved, especially in the social environment segment. Further studies to investigate the said factors affecting the learning environment are needed. The faculty members also have to address the said issue to improve and promote a better learning environment throughout the course.

COMPETING INTERESTS

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

AUTHORS’ CONTRIBUTION

Saphira Nada Khalishah – developing research proposal, technical case details, and publication manuscript.

Ziske Maritska – developing research proposal, technical case details, and publication manuscript.

Joko Marwoto – developing method details.

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