

The Noteworthiness of Constructive Feedback and Student-Reflection to Approach Competence-Based Curriculum: An Explanatory Study of Medical Schools in Indonesia

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ABSTRACT

Background: Competence-based medical curriculum requires the acquisition of complex abilities that should be assessed longitudinally. The programmatic assessment model can facilitate a complete picture of students' competencies. The five components of learning, assessment, supporting activities; and intermediate to final evaluation provide holistic learning experiences for students and mentors to participate in the learning strategies. We aim to assess the application of longitudinal components of the programmatic assessment model to the current assessment system based on student perceptions

Methods: This study used a cross-sectional mixed-method sequential explanatory design at six medical schools in Surabaya, East Java of Indonesia. The instrument was 43 items of validated questionnaire based on the five components and the focus group discussions.

Results: This study used a cross-sectional mixed-method sequential explanatory design at six medical schools in Surabaya, East Java of Indonesia. The instrument was 43 items of validated questionnaire based on the five components and the focus group discussions

Conclusion: The overall assessment system is well-perceived by the students; however, the 'supportive activities' component has been minimally applied. So the 'assessment of previous learning' is still prominent in the current assessment system.

Keywords: programmatic assessment, supporting activity, constructive feedback, student-reflection

PRACTICE POINTS

- Students feel the lack of 'supporting activities' in their assessment component which indicated the fundamental of the programmatic assessment component may not be addressed appropriately.
- Lack of supporting activities moreover lack of feedback and reflection found in this study, which is similar to the latest evidence of programmatic assessment in the similar context
- The Competence-based curriculum has not been followed by the competence-based assessment system that should provide 'assessment for further learning.'

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INTRODUCTION

Medical education assessment consists of various methods that encourage and stimulate learning and provide information regarding educational efficacy to institutions and educators.¹ According to Epstein,² assessment has three main objectives: assessment drives learning, assessment of competence, and assessment as a selection tool. Assessment is seen as an essential part of education in terms of providing an overview of the quality of students and our educational process. It is seen as a significant factor in directing the learning and behaviour of students and faculty.³

Nowadays, student-assessment should not be a set of obstacles that students have to go through rather than a solid system for providing feedback and learning.⁴ Most of the assessments in medical schools may not provide much valuable information on students' learning progress and limit the information to more quantitative information like only numbers and alphabets. Trying to optimize everything in one assessment method at a time is impossible.⁵ Therefore, an overall assessment system is needed that can provide reliable, valid, and accountable information that can provide adequate support for the student learning process.^{6,7} Programmatic assessment emerged and is described as an arrangement of assessment methods planned to optimize 'fitness for its purpose.' Fitness for purpose is a functional definition of quality, which is the core idea of its contribution to achieving programmatic assessment goals.

Programmatic assessment has five components of (1) learning activities; (2) assessment activities; (3) supporting activities; (4) intermediate evaluation; and (5) final evaluation. 'Learning activities' can be any activities that drive the learning process. 'Assessment activities' consist of a single data point representing a single assessment, specific constructive feedback should be provided to the student. 'Supporting activities' is the reflective session for students where they gather any information and feedback from a mentor. 'Intermediate evaluation' has a role in gathering all information consisting of 'learning activities', 'assessment activities', and 'supporting activities'

to know the progress of the students' learning in a period of time. lastly, 'the final evaluation' is high-stakes decision-making for all students' artifacts, which are gathered from the beginning until the end of their study recorded in a portfolio.

The programmatic assessment model is a longitudinal system of assessment planned to optimize 'assessment for further learning.'^{7,8} The model shifting the paradigm of assessment function from summative (assessment of previous learning processes) to formative (the continuous feedback and reflection that drive the further learning). The five components of the programmatic assessment model will improve the student's learning experience; to help them reflect, plan, and get involved in their learning process. So, students will not only study for the test, but will achieve an essential lesson to move forward.

The Context of Medical Education in Indonesia

Medical student admission in Indonesia is held through an entrance examination. The examination is a grade-based assessment that should be able to identify students who can complete their education process.⁹ Indonesian students are mostly familiar with summative assessments during the basic school years until the beginning of their higher education and also afterwards. There were limited questions for motivation and personal description; compared to university admissions in the northwestern countries.

Before become a medical doctor, students need to pass the national examination (grade-based assessment) to finish their study. This system makes students tend to study to pass examinations than to attain meaningful abilities along their educational process. Constructive feedback during clinical education is also lack.¹⁰

Medical education in Indonesia has had a long journey, starting from the Dutch curriculum in the early 1900s', the American curriculum in the 1970s', and then turning to the global competency-based curriculum in the 2005s.¹¹ However, changes towards competency-based curriculum do not directly follow by more proper assessment system. The competency-based curriculum requires complex

abilities to be longitudinally observe that cannot be done with only a single test but throughout the educational process.¹²

On top of the context, Indonesia is regarded as hierarchical and collectivistic cultural background, in which power distance limit the interaction, communication, dialogue, and ultimately feedback, between the senior-junior people; including teacher-student relationship.¹³ Nevertheless, apparently patients want more partnership relationship with their doctor,¹⁴ as well as students with their teachers.¹⁵

METHODS

Design

This research is a cross-sectional study with a mixed-method sequential explanatory design,¹⁶ that aims to describe the existing assessment system at the medical schools in Surabaya city seen from the perceptions of students; based on the framework of the programmatic assessment model. Main data was taken from the quantitative methods using questionnaires and the followed by qualitative methods of focus group discussions. The sample of this study was taken from six medical schools in Surabaya city, East Java, Region of Indonesia. Surabaya has the maximum number of medical schools in a big city of Indonesia and located in the centre of Indonesia.

Participants

Quantitative study

The research subject is the population of medical education students at the six medical schools in Surabaya city. The total population of six medical schools is 1901 students; 442 quantitative data were collected and analysed. The characteristic of respondents is shown in table 1. This study obtained a response rate of 23.25% (442 respondents) where the sample size based on Slovinc's formula table conducted by Slovinc¹⁷ the minimum number of samples with a total sample of 1901 students was 239 samples for a confidence level of 90% and 323 sample for 95% confidence level. So that with 442 respondents obtained can be said that this study can represent the sample population studied.

Qualitative study

Respondent for the qualitative study was taken from 442 respondents that were eligible for this study. We invited three students from every six medical schools with heterogeneous criteria for each student to represent the high, middle, and low average questionnaire scores. Ten students from four medical schools participated in the focus group discussion. Respondents consist of four 1st semester students, three 3rd semester students, and three 5th semester students, with two students being male and eight students being female. We conducted the FGD through an online platform followed by in-depth interview through phone call.

Instrument

Quantitative study

In previous study, Ainin and colleagues,¹⁸ developed 43 items of 5-scale Likert questionnaires consists of five sub-scale representing five programmatic assessment components (from 1 score very poor to 5 score very good). The validity test obtained was the R-value > R-table (with a significant two-tailed r table value at the 0.01 level is 0.128 for n = 442); which included a good validity result that indicates that each question item did measure what was desired in the instrument (18). The reliability test yielded with the overall Cronbach's alpha value (N=43 items) 0.969. The results show that the questionnaire had internal consistency, classified as high.¹⁹ The instrument also had been validated by one of the founders of programmatic assessment from Flinders University. We distributed the questionnaires to the participants of our study.

Procedures

The quantitative survey was conducted through an online Google form. We reached out to the students of six medical schools through the each medical school. We continued with an online focus group discussion using the Zoom Meeting platform then followed by in-depth interview through phone call. We reached out to students by personal message after selecting using inclusion criteria.

Table 1. Characteristics of the Respondents in the Quantitative Study

Institution	Accreditation	Respondent	%	Semester				Gender	
				1st	3rd	5th	7th	Male	Female
Medical school A	A	31	7.01%	13	7	6	5	10	21
Medical school B	B	6	1.36%	2	3	5	1	2	4
Medical school C	B	45	10.18%	13	15	5	2	12	33
Medical school D	B	194	43.89%	48	51	49	46	37	157
Medical school E	B	15	3.39%	4	3	4	9	2	13
Medical school F	B	151	34.16%	67	74	10	-	29	122
TOTAL		442	100%	147	153	79	63	92	350

Analysis

Quantitative analysis used descriptive analysis and statistical analysis by using SPSS 25 software. Qualitative analysis used a descriptive thematic analysis approach. This research had obtained ethical eligibility from the Medical and Health Research Ethics Committee (MHREC) UGM with the ethical eligibility number KE/FK/1300/EC/2021.

mean score of 4.030, and final evaluation with a mean score of 4.208. The overall result shows in table 2.

We also illustrate a graph from the average result above and use trend-line to picture the gap of each component one to another (Figure 1). The ‘supporting activities’ is described to be the lowest experiences in the view of the students. We explored this illustration into each of medical schools and the findings were similar for all the six schools.

RESULTS AND DISCUSSION

Quantitative Study

The overall result of the evaluation of programmatic assessment shows a good result with a mean score of 3.997. Meanwhile, the result of each component of the programmatic assessment is learning activities with a mean score of 4.205, assessment activities with a mean score of 4.016, supporting activities with a mean score of 3.797, intermediate evaluation with a

We describe the average of each question theme from the quantitative instrument. The result shows more detail of the item that students perceive as less good or need to be improved. We found that four themes have the lowest mean score among the overall theme from the analysis. Those themes are reflection, feedback, mentoring, and learning progress; that represented the ‘supporting activities’ and ‘intermediate evaluation.’ The overall results shown in Figure 2.

Table 2. Average result of the Programmatic assessment’s components

Each component of programmatic assessment	Mean (SD) Of maximum 5 point Likert scale	95% CI		Category	Notes
		Lower	Upper		
Learning activity	4.205 (0.48)	4.159	4.250	Very good	*Category 1 – 1.80 = Very poor 1.801 – 2.60 = Poor 2.601 – 3.40 = Borderline 3.401 – 4.20 = Good 4.201 – 5 = Very good ANOVA measurement between items: not significant
Assessment activity	4.016 (0.55)	3.965	4.067	Good	
Supporting activity	3.797 (0.61)	3.740	3.855	Good	
Intermediate evaluation	4.030 (0.76)	3.961	4.103	Good	
Final evaluation	4.208 (0.60)	4.152	4.265	Very good	
All components of programmatic assessment	3.997 (0.50)	3.950	4.044	Good	

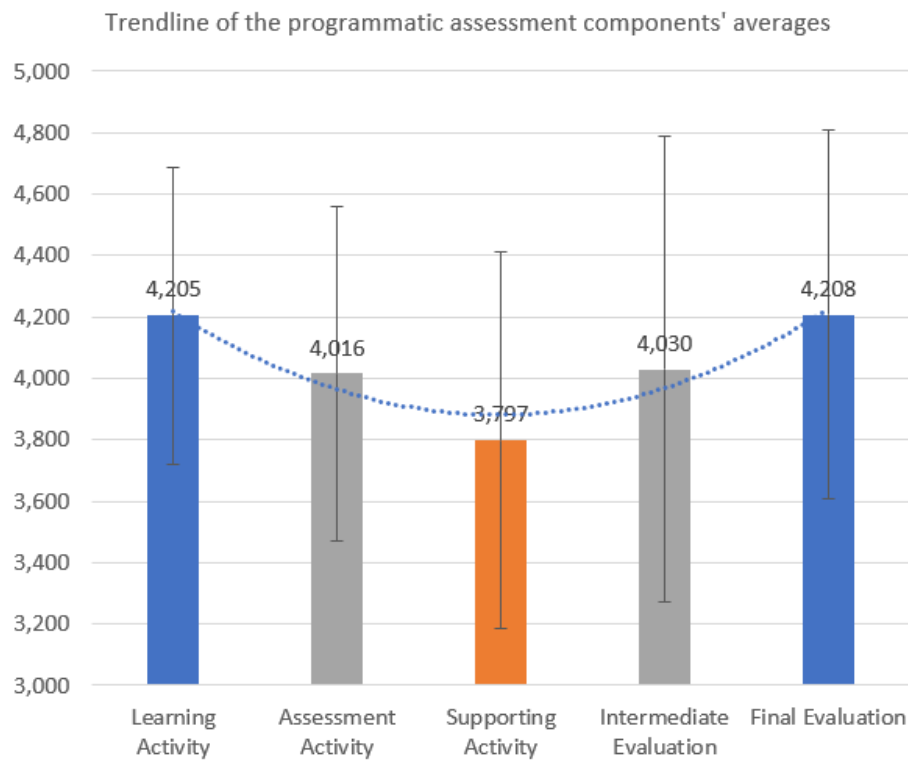


Figure 1. Trend-line of Programmatic Assessments' Component Averages based on Students' Perception

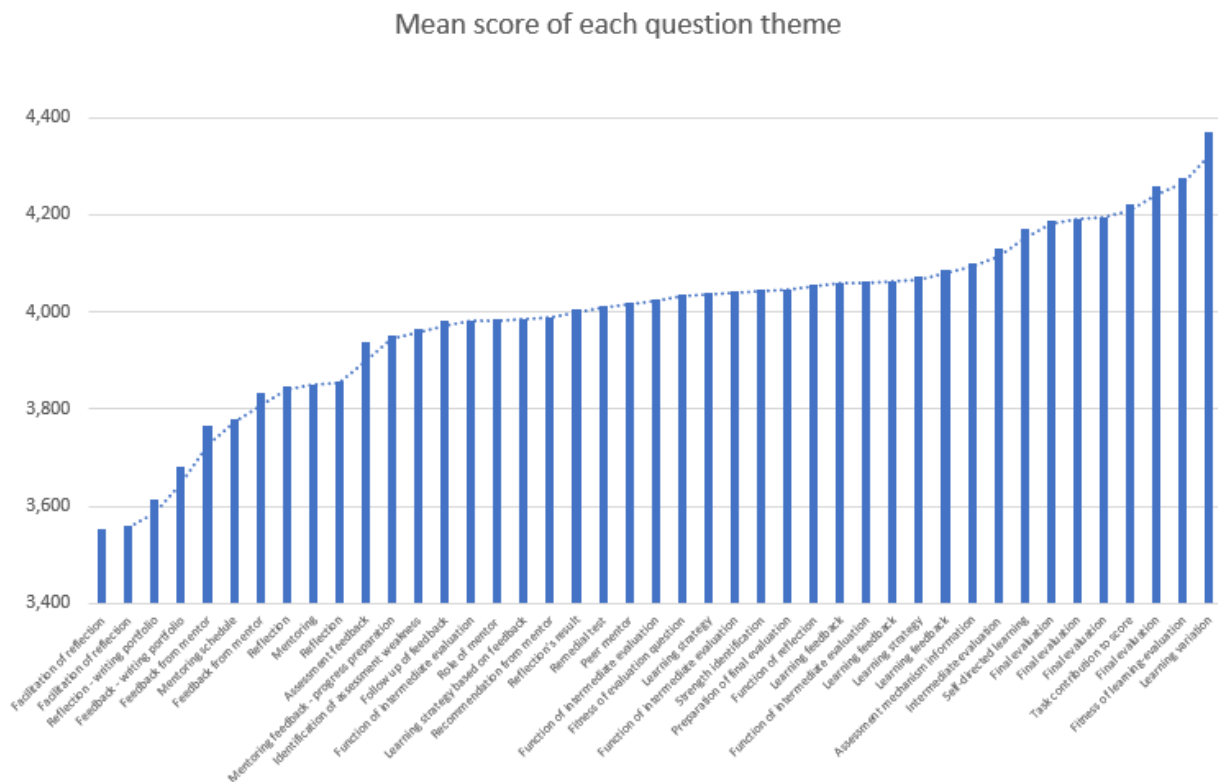


Figure 2. Mean Score of Each Question Item from Lowest to Highest Perception

Qualitative Study

The qualitative study was conducted through focus group discussion. The transcript of the FGD was then analysed using a descriptive thematic approach. We found four main themes that all the participants repeatedly said during FGD. Those themes are perceived as not being maximized or absent in students' learning process. Those themes are Feedback, Reflection, Mentoring, and Learning Progress. We also confirming student through in-depth interview regarding why they perceive 'supporting activity' good meanwhile they perceive it lack in the FGDs. The possibility is the socially desirable answers that were given by the students as part of expressions of hierarchical and collectivistic culture. The overall themes mentioned during FGD are shown in Figure 3. Figure 1 to 3 showing the similar messages of students feel that 'supportive activities' and 'intermediate evaluation' component are the least experienced within the curriculum. The FGD Guided question shown in Table 3.

Table 3. FGD Guidance Questions

1) Learning Activities:

- a) In your opinion, to what extent is the suitability of the learning materials you get with the exams given?
- b) In your opinion, how does the institution accommodate your learning process in preparing yourself for the exam?
- c) In your opinion, how is the variety of learning that you get in the learning process towards the exam?
- d) In your opinion, to what extent do the exams you take can see your learning progress?

2) Assessment Activities:

- a) In your opinion, does the exam you do provide information about your weaknesses and strengths in learning? To what extent was the information provided and helped you improve your competence?
- b) In your opinion, to what extent have you been given the opportunity to prepare a plan for improving the exams that you have taken?

- c) In your opinion, what is your assessment system like? To what extent do you believe the system can improve your learning process?

3) Support Activities

- a) In your opinion, is there a system that you can use to document the results of your assessment and learning? In what form is the system?
- b) How do you think the system can help you improve your learning?
- c) In your opinion, is there an opportunity to reflect on the results of your assessment and learning? To what extent did you get this opportunity? How do you do it?
- d) In your opinion, do you have an academic supervisor (DPA)? What is the role of DPA in your learning and assessment?
- e) In your opinion, does DPA provide input and suggestions for your reflection on your learning outcomes? How are the inputs and suggestions given in improving your learning?

4) Middle Evaluation

- a) In your opinion, is there a formative evaluation in the middle of your learning process? What information is provided in the evaluation?
- b) In your opinion, does the evaluation improve your learning? How can this improve your learning?
- c) In your opinion, to what extent did the evaluation prepare you for the final evaluation?
- d) In your opinion, is this evaluation necessary? What are the advantages and disadvantages of doing this?

5) Final Evaluation

- a) In your opinion, did you get clear information about the terms of the assessment in making the final decision in your study? How is this information provided? To what extent was the information explained to you?
- b) In your opinion, was the informed consent mechanism clear? What is the mechanism?
- c) In your opinion, do you know the rationale for the mechanism? How would you rate the mechanism?
- d) In your opinion, is the mechanism for determining your graduation based on the overall assessment you have done? What is your view on this?

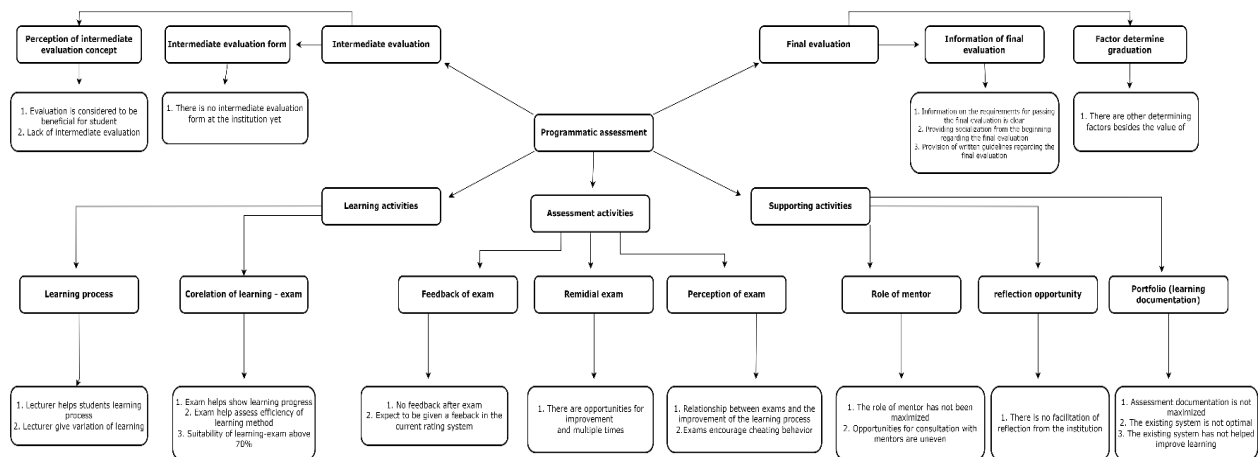


Figure 3. Theme Tree of Qualitative Study

This study captures several facts in each component of programmatic assessment as we conducted a sequential explanatory design. We start to blindly capture the overall perception of the current assessment system using the quantitative method. After we have the picture of the current assessment system, we ensure the findings by doing further study using the qualitative method. We will discuss lack findings of the component of programmatic assessment in this study.

Assessment Activity Component

Assessment activity in this study was perceived well both in quantitative and qualitative findings, But students in this qualitative study regret that they only get grades/scores as their assessments' feedback. Grade/score based on Shute²⁰ was the most straightforward kind of feedback that we can give for student learning. Students could not gain meaningful comprehension by only getting the score/grade after an examination. Assessment needs to be one of the learning media for students, not an obstacle to their learning. Norcini et al,²¹ in the Ottawa conference, stated a framework for good assessment in the context of a single assessment, this framework is the heart of the formative function of the assessment.

Supporting Activity Component

Supporting activity is the heart of the programmatic assessment model. Supporting activity in the programmatic assessment model consists of several

main items: feedback, reflection, and mentoring; that should contain rigorous teacher-student dialogue. We capture the lack of supporting activity in the current assessment system based on student perception in this study. We conducted a one-way ANOVA test, and we have insignificant results. However, the quantitative survey then confirmed by a qualitative study found that students perceive limited feedback (score/grade only), no chance of reflection, and inadequate mentoring. Supporting activity emphasizing the "assessment for learning." It could support students in taking the lead in their learning process. It could also direct assessment activities by providing relevant feedback, which can help reduce the tension between formative and summative assessment.²²

Feedback

This qualitative study captured that there is a lack of an assessment function as a formative experience where students feel that the current assessment is still summative because they have not received any feedback from the assessment activities they are undergoing. Vleuten et al.,⁷ in their research, underlined that if an assessment is directed to encourage further learning, this assessment has to be able to provide valuable information to students.

Reflection

Another lack in the assessment system seen in this study is the opportunity for students to reflect on the learning process or the assessment they undergo

during their learning process. Reflection of the learning and assessment activity can be the best tool for driving student learning, not only contemplating their previous study but also taking notes and planning strategies for their future study based on their reflection. Sargeant et al.²³ showed clear findings indicating that feedback, reflection, and follow-up of feedback are essential for learning and skills development. Reflection must be followed by a follow-up plan from the feedback obtained so that it can improve student learning. The reflection process is crucial in the active learning process undertaken by students. In adult learning theory, using reflection and feedback as a tool to develop both fundamental knowledge and skills seems to be starting to show valuable insights for educators to be able to assist students in developing their independent learning.²⁴

Mentoring system

Mentoring has a vital role in establishing a supportive and conducive learning environment for student learning. Vleuten et al.,⁶ show the importance of institutions providing mentoring facilitation to students. Mentoring can be the best medium for students to plan their future learning. As we know, students' mentors, usually doctors or lecturers, have plenty of experiences that can be shared with students. According to Driessen & Overeem,²⁵ feedback should ideally be part of a reflection dialogue where this should be able to stimulate follow-up from the feedback obtained. Mentoring should be one of the most effective ways to create this dialogue, and this activity is closely associated with good learning outcomes for students.

Intermediate Evaluation

The intermediate evaluation component in programmatic assessment is the best tool to predict students' competencies. In the evaluation of the current assessment system, we found that there is limited form of formative evaluation in the middle of their study that can provide information on the extent of the competencies that students already have and what weaknesses need to be corrected before continuing the education process. Students said that they have grade evaluation every two semesters,

but the decision is based only on summative results (scoring/grading). This kind of middle evaluation lack of learning purpose. Students are more like to be judged than given feedback regarding their strengths and weaknesses in their studies. Therefore, according to Vleuten et al.⁶, providing an evaluation in the middle of the process that can provide early information and feedback to students regarding the potential outcomes of their learning can be a diagnostic, therapeutic, and prognostic tool.

Providing opportunities for students to pause in the middle of their educational journey to then be able to measure their weaknesses and strengths during the educational process can provide significant benefits both for the institution and for students. Research conducted by Heeneman et al.²⁶ shows that giving a middle evaluation in a progress test to students has an increasing impact on their overall total score. Students feel that the analysis and feedback obtained from the progress test were significant for their learning process.

Final Evaluation

The students indicate satisfaction with the final evaluation items, we do not think they comprehend what was asked in this regard, based on the previous findings of 'supporting activities' and 'intermediate evaluation.' Students' satisfaction with the final assessment can be the habit of receiving final marks as scores to pass/ not pass the exam. The final evaluation needs to take complete artifacts of the students' learning to make the high-stakes decision reasonably. We may see the whole picture of students' competency from each data on their portfolio. So that we do not need to hold an exit examination to decide whether students pass/fail. This final decision needs to be robust and based on rich information and numerous data points to lie in the trustworthiness of the decision.⁷

The heart of programmatic assessment is the 'supporting activity' moreover feedback, reflections and further learning plan. Medical teachers tend to neglect the formative aspect of the assessment, such as narrative feedback, and more focus on the grade. The latest research conducted by Jong et al.²⁷ shows

the importance of high-quality narrative feedback and its correlation with the difficulty of making high-stakes decisions at the end of the students learning. If we can give high-quality narrative feedback to the students, it will be easier for us to decide the students' achievements through their portfolios.

In the competency-based medical education (CBME) curriculum, the main goal is to produce a competent doctor with complex abilities. Complex abilities could not be measured with a single assessment method or a single period. Every assessment activity during the students' learning process is a piece of evidence of their competency, and we need to mend all the pieces into the whole picture of general medical education. A meaningful assessment system is critical to be implemented along with the competence-based curriculum.²⁸

This study can provide a bigger picture of current assessment method where we can improve assessment to be another learning resources for medical student. This study uses new instrument of self-evaluation based on programmatic assessment constructed by Ainin et al,¹⁸ to capture the strength and the weakness of the assessment system based on student perspective. Despite the novelty of the study, this study also has limitations. Because we evaluate current system assessment based on students' perception, because of that need to be followed by education providers' perception to complete the whole picture.

CONCLUSIONS

The results of this study indicate that the learning activity and assessment activity component in programmatic assessment perceived no constraint by the students. Although statistical results show insignificant of all the five components, the result of 'supporting activity' has the lowest tendency in the students' learning process. In the current assessment system, students only get limited feedback from their assessment process (score), limited chance of reflection on their previous learning and assessment activities, and a lack of mentoring activities to support their learning progress.

RECOMMENDATIONS

This study should be replicated in many more medical schools in Indonesia and other countries especially that hold power-distance culture which minimize the dialogue between senior and junior people including teachers and students, doctors and patients. We also need to have more rigorous qualitative study to explore students and teachers' opinion regarding the current educational system.

COMPETING INTEREST

All authors declare that there is no conflict of interest related to this research.

AUTHORS' CONTRIBUTION

Achmad Yarziq Mubarak Salis Salamy – developing research proposal, collecting data, data analysis, and publication manuscript.

Yoyo Suhoyo – supervising research proposal, collecting data, data analysis, and publication manuscript.

Mora Claramita – supervising research proposal, collecting data, data analysis, and publication manuscript.

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