

## ORIGINAL ARTICLE

# Lecturers' Beliefs and Perceptions on Formative Assessment and Their Practice in Training Medical Students in a Malaysian University

Ong Kai Li<sup>1</sup>, Khairunnisa Fatini Abd Jalil<sup>1</sup>, Haris Danial Hisham<sup>1</sup>, Nur Syazana Mohamad Kasim<sup>2</sup>, Faridah Idris<sup>3</sup> and \*Siti Khadijah Adam<sup>4,5</sup>

<sup>1</sup> Doctor of Medicine Programme, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

<sup>2</sup> Deputy Dean's Office (Academic of Medicine), Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

<sup>3</sup> Department of Pathology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

<sup>4</sup> Medical Education Research and Innovation Unit (MERIU), Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

<sup>5</sup> Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

## ABSTRACT

**Introduction:** Formative assessment refers to frequent evaluation of student attainment to identify learning needs. It is crucial for the development of soft skills and improvement in learning progress in the classroom. However, the practice is still lacking and undervalued in medical education. This study aims to determine the level of beliefs and perceived practices of formative assessment among lecturers teaching undergraduate medical programme in a Malaysian university. **Methods:** A self-administered 27-item questionnaire was distributed to 62 lecturers in a medical school in Selangor, Malaysia. They were required to indicate their agreement and frequency on each item that describes their beliefs on the importance and practice of formative assessment in the medical programme. All data was analysed using IBM SPSS Statistics software version 26. **Results:** Majority of the respondents indicated that the assessment was conducted frequently during small group sessions (64.5%), through written examination (59.7%) and during practical classes (53.2%). The respondents rated positively on the importance and practice of formative assessment. The score of formative assessment practice through scaffolding was significantly higher than monitoring ( $Z = 944.5$ ,  $p < 0.001$ ). There was no significant correlation between beliefs and practice of formative assessment ( $r(62) = 0.213$ ,  $p = 0.097$ ). Additionally, the duration of service had no significant association with their perception and practice of formative assessment ( $p < 0.05$ ). **Conclusion:** The results of this study suggested that regardless of their level of experience, lecturers exhibited a positive perception of and engagement with formative assessment in training medical students. A substantial improvement of peer and self-assessment practices is warranted to foster student autonomy and accountability on their learning.

Malaysian Journal of Medicine and Health Sciences (2023) 19(SUPP12): 22-28. doi:10.47836/mjmhs.19.s12.4

**Keywords:** Assessment; Formative Assessment; Medical Students

## Corresponding Author:

Siti Khadijah Adam, PhD

Email: sk.adam@upm.edu.my

Tel: +603-97692354

## INTRODUCTION

Assessment refers to the broad range of strategies or methods used by educators to evaluate, measure, and record students' academic performances or educational needs (1). The two types of assessment include summative assessment and formative assessment. Formative assessment, also known 'assessment for

learning', plays a crucial role in students' development of soft skills and improvement in learning progress in the classroom (2). It is usually low-stakes and conducted informally to help students to recognise knowledge gaps and areas of improvement. Therefore, feedback is the cornerstone in formative assessment. It motivates students to engage in learning and skill development rather than merely concentrating on getting high results on the final examination (3). On the other hand, summative assessment is usually a high-stakes evaluation to make a judgement of students' performance. It is also referred to as 'assessment of learning'. The primary difference between the formative and summative

assessment lies in the frequency of occurrence and nature of the assessment. While formative assessment is commonly conducted continuously in a course to provide feedback to teachers and students and enhance learning, summative assessment is done at the end of a term or a course to measure student's competencies and effectiveness of a course.

Formative assessment is a powerful tool for medical students to bridge the gaps in their knowledge and skills. It nurtures continuous improvement, helps students to develop and refine clinical skills in a supportive environment and fosters a deep and meaningful understanding of medical concepts (4). As formative assessment is regarded as an assessment for learning, monitoring the learning progress centred around feedback and students' self-monitoring (5). By giving feedback to students on what has been done and what can be done to improve it, this promotes students' self-regulation (6). Students can use formative assessments to guide future learning by reflecting on feedback and ensuring that expectations have been met. It is important to note that feedback is not the end target, however, it helps to support the learners to achieve the learning outcomes (7). Vygotsky (1978) introduces the concept of zone of proximal development (ZPD), which represents the gap between what the individuals can do independently and what the individuals can do with the help or guidance from others (8). In formative assessment, scaffolding strategies deal with enhancing learning in the ZPD. Scaffolding can be defined as temporary support or assistance given by the teachers or peers in helping students to perform a task that initially cannot be done by themselves so that they can perform a similar task by themselves later (9). It is perceived as helping to develop the student's ZPD. During the process of interactive learning, the students' ZPD will be activated, and this will help them to move forward to the next step of learning (10). Once the students can achieve a task or learn on their own, the scaffolding will be removed. In other words, scaffolding is not permanent, and the assistance given promotes the students' understanding and for them to be able to take charge of their learning subsequently (11).

However, there are many challenges and barriers that are faced by medical lecturers in implementing formative assessment. Some of the most commonly described challenges of formative assessment found in the literatures were related to time constraint and a heavy workload required (7,12,13). Formative assessment requires significant preparation as it is highly time consuming and burdensome to the educators as they have to devote themselves to carry out multiple tests, grading regularly and maintaining records. Other barriers include limited assessment literacy and familiarity with assessment methods and feedback (7,14) and student's resistance and lack of motivation to participate in formative assessment (14,15,16). The

latter behaviour can be seen when students only focus on passing or getting good grades in examinations rather than using assessments as a learning opportunity. The barriers and challenges in implementing formative assessment have caused a gap and limited the potential of formative assessment has to offer. Therefore, this study aimed to identify the beliefs and to what extent formative assessment is practised in a Malaysian medical school. The findings of this study will help to understand the adoption of formative assessment and improvement of current practice to enhance medical student's academic performance and lecturer's teaching strategies.

## MATERIALS AND METHODS

This is a cross-sectional study conducted in a medical school located in Selangor, Malaysia from 1st March to 31 May 2021. The study involved lecturers teaching undergraduate medical programme during 2020/2021 academic session. Lecturers from preclinical and clinical phases were recruited. They were excluded if they were on extended leave such as sabbatical leave or study leave. Proportionate stratified sampling technique was used to calculate the sample size. In total, 62 participants were involved in this study.

A self-administered questionnaire was used to determine the perception and practice of formative assessment. It consists of 2 sections; Section A: Sociodemographic characteristics (gender, academic phases and duration of services), and Section B: Perception and practice of formative assessment, modified from Guadu and Boersma (2018) (17). The questionnaire contains 26 items which form three domains i.e. beliefs on the importance of assessment, perceived practice of formative assessment (monitoring), and perceived practice of formative assessment (scaffolding). Respondents were required to respond to each individual item based on a five-point Likert scale (strongly disagree, disagree, undecided, agree, strongly agree). The responses were converted into numeric; 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. The negative statements were scored in reverse which indicated that the higher the score, the more the participants agreed with the statement. An additional item was included related to the mode of assessment that was practised in the programme. The respondents were required to respond to each individual item from a four-point Likert scale (frequently, sometimes, never, don't know). The percentage of each mode of assessment was summed up to indicate the frequency of assessment practice.

The questionnaire was tested for content and face validity. Some modifications were made on the items based on the validity studies. A pilot study was conducted to evaluate the reliability of the questionnaire. The Cronbach alpha value was 0.875. Ethical approval was received from the Ethics

Committee for Research Involving Human Subjects Universiti Putra Malaysia (JKEUPM-2021-091).

### Data analysis

IBM Statistical Package of Social Science (SPSS) version 26 was used to analyse the data. Descriptive analysis was used to describe the sociodemographic characteristics of participants in terms of percentage and frequency. Normality of data was checked using Kolmogorov-Smirnov test. A value of  $p < 0.05$  was considered significant.

## RESULTS

The sociodemographic characteristics of the respondents are summarised in Table I. Female accounts for most of the respondents (66.1%). There was an equal distribution of lecturers from preclinical and clinical phases. Meanwhile, the majority (29%) of the respondents were less than 5 years of teaching, followed by 5 to 10 years (25.8%).

**Table I : Demographic characteristics of the respondents (n = 62)**

Characteristics	Frequency (n)	Percentages (%)
<b>Gender</b>		
Female	41	66.1
Male	21	33.9
<b>Academic Phases</b>		
Preclinical	31	50.0
Clinical	31	50.0
<b>Duration of Service</b>		
Less than 5 years	18	29.0
5 - 10 years	16	25.8
11 - 15 years	13	21.0
More than 15 years	15	24.2

The respondents were required to indicate the frequency of assessment practice in the programme (Table II). Majority of the respondents indicated that the assessment was frequently conducted during small group sessions (64.5%), through written examination (59.7%) and practical classes / labs / workshops (53.2%). Students were also frequently being assessed during presentations or audio/video products (50%). However, reflective writing/logbook, peer and self assessments were sometimes conducted to assess the students.

Generally, the respondents rated positively on the importance and practice of formative assessment (Table III). Based on Guadu and Boersma (2018), to determine the level of beliefs and practice of formative assessment, overall scores of greater than or equal to 4.00 is very good, between 3.00 and 4.00 is medium while those of less than 3.00 is considered low (17). Our results showed that the median for each domain

**Table II : Mode of assessment practised in the programme**

No	Items	Category	Frequency (percentage)
1.	<b>Small group sessions (eg: PBL / Case Study / Bedside Teaching, etc)</b>	Frequently	40 (64.5)
		Sometimes	21 (33.9)
		Never	1 (1.6)
		Don't know	0 (0.0)
2.	<b>Written examination (eg: Essay/MCQ/SAQ, etc)</b>	Frequently	37 (59.7)
		Sometimes	23 (37.1)
		Never	2 (3.2)
		Don't know	0 (0.0)
3.	<b>Clinical Examination (eg. OSCE / Long case / Short case, etc)</b>	Frequently	24 (38.7)
		Sometimes	21 (33.9)
		Never	15 (24.2)
		Don't know	2 (3.2)
4.	<b>Reflective writing / Logbook</b>	Frequently	19 (30.6)
		Sometimes	24 (38.7)
		Never	18 (29.0)
		Don't know	1 (1.6)
5.	<b>Practical classes / Labs / Workshops</b>	Frequently	33 (53.2)
		Sometimes	21 (33.9)
		Never	7 (11.3)
		Don't know	1 (1.6)
6.	<b>Presentation/Audio or video product</b>	Frequently	31 (50.0)
		Sometimes	26 (41.9)
		Never	4 (6.5)
		Don't know	1 (1.6)
7.	<b>Peer Assessment</b>	Frequently	11 (17.7)
		Sometimes	36 (58.1)
		Never	14 (22.6)
		Don't know	1 (1.6)
8.	<b>Self Assessment</b>	Frequently	11 (17.7)
		Sometimes	29 (46.8)
		Never	21 (33.9)
		Don't know	1 (1.6)

PBL = problem-based learning, MCQ = multiple choice question, SAQ = short answer question, OSCE = objective-structured clinical examination

**Table III : Median score of the respondents' perception and perceived practice of formative assessment (n = 62)**

Domain	Median (IQR)
Beliefs about the importance of formative assessment	4.14 (0.32)
Perceived practice of formative assessment (monitoring)	4.00 (0.53)
Perceived practice of formative assessment (scaffolding)	4.11 (0.78)

was above than 4.00 which revealed that the lecturers' beliefs and practices towards formative assessment were very good.

Wilcoxon signed-rank test was used to compare the perceived practice of formative assessment scores. It was found that the median score of scaffolding was significantly higher than the monitoring ( $Z = 944.5$ ,  $p < 0.001$ ). This reveals that the lecturers tend to practise formative assessment through scaffolding more than through monitoring.

The relationship between their beliefs and practices on formative assessment was tested using the Spearman correlation test. Although there was a positive correlation, it was not statistically significant ( $r(62) = 0.213$ ,  $p = 0.097$ ).

The association between these domains and the respondent's duration of service was also analysed using Kruskal Wallis test. There was no significant association between the beliefs and practice of formative assessment with the duration of service of the respondents ( $p > 0.05$ ) (Table IV).

## DISCUSSION

Formative assessment is widely recognised as a valuable tool for enhancing teaching methods to benefit student learning. Extensive literature provides ample evidence that implementing formative assessment strategies can lead to enhanced student achievement and motivation to learn. Despite the widely acknowledged benefits of formative assessment, the unpredictable nature and need for adjustment pose significant challenges for educators to practise it (18,19). Moreover, our teaching and learning as well as assessment activities are

strongly influenced by the examination-oriented culture which emphasises on the performance in summative assessment as a goal of education (20,21).

Our findings showed that the lecturers have a positive belief about the importance of formative assessment in enhancing student learning and instruction. This was also evident in their score on the perceived practice of formative assessment. Theoretically, the lecturer's understanding and beliefs towards formative assessment have an impact on how it is conducted in the classroom (22). However, we did not find any correlation between the respondents' beliefs and their perceived practice. This is in accordance with a qualitative study by Widiastuti et al. (2020) (23). We assume that the lecturers already have high awareness and proficiency on formative assessment practice through various faculty development programmes, academic journals and publications, social media and online platforms which provide a stream of information about emerging best practices in education. Moreover, there may be numerous formative assessment methods that are already incorporated into the curriculum. Therefore, it is imperative for them to implement them accordingly.

The formative assessment might be conducted during the small group sessions, for example, bedside teaching, PBL and case study as well as practical classes. Continuous assessment in the classroom is beneficial for evaluating students' knowledge and clinical skills which can gather pertinent data and information that may guide future instruction and learning. The present study also demonstrated that the lecturers practise formative assessment through monitoring, in which students were given opportunity to determine their own learning objectives, engage

**Table IV : Association between duration of service and their perceptions and perceived practices of formative assessment (n = 62)**

	Duration of Service	Mean Rank	Median (IQR)	df	P-value
<b>Beliefs about the importance of formative assessment</b>	Less than 5 years	32.75	4.00 (0.64)	b3	0.383
	5 - 10 years	34.63	4.14 (0.21)		
	11 - 15 years	23.96	3.86 (0.43)		
	More than 15 years	33.20	4.14 (0.57)		
<b>Perceived practice of formative assessment (monitoring)</b>	Less than 5 years	32.31	4.00 (0.60)	b3	0.923
	5 - 10 years	33.25	4.00 (0.47)		
	11 - 15 years	31.04	4.00 (0.50)		
	More than 15 years	29.07	4.00 (0.70)		
<b>Perceived practice of formative assessment (scaffolding)</b>	Less than 5 years	31.58	4.22 (0.58)	b3	0.819
	5 - 10 years	34.44	4.33 (0.89)		
	11 - 15 years	31.42	4.00 (1.00)		
	More than 15 years	28.33	4.00 (0.67)		

in self-reflection and were given feedback on their progress. However, they were more inclined to practise formative assessment via scaffolding more than monitoring. For instance, they adapt their teaching approach whenever they observe that students are struggling to comprehend a particular topic and assist the students via questioning as instructions and teaching strategies to increase students' involvement and contribution during the learning session (24,25). This shows a collaborative process, where the lecturers are more involved in the teaching and learning process. They may help the students to develop their ZPD and the scaffolding will be lifted once the students are capable of completing a task or learning on their own.

This is also in accordance with the findings that showed a lower frequency of peer and self-assessment being carried out. It seems that the lecturers are usually at the centre of the assessment process, rather than the students. In recent years, self and peer assessments are increasingly playing a key role in student-centred learning in higher education (26,27). They involve students' active participation in learning activities and have certain benefits in developing reflective, critical and accountable future professionals (28,29). Moreover, peer assessment promotes group interaction and cooperative learning, making them more autonomous and responsible for both their own work and that of their peers.

Duration of service as a lecturer can be translated to the level of knowledge and experience in teaching. A study by Sulaiman et al. (2020) demonstrated that teachers with less than three years of teaching experience usually implement formative assessment (30). Earlier, Marsh (2007) claimed that teachers who have experienced domination of summative assessment as learners are less likely to adopt formative assessment (31). Nevertheless, their professional experiences including participating in professional development programmes and learning environment encourage them to be the agency of change by changing their past summative-focused experiences to practising more formative assessment (32,33). Teacher's knowledge and experience are important factors in formative assessments as they possess skill, attitude, awareness of standards and expertise in evaluative skills, therefore, able to provide helpful insights in feedback (34). The present study showed that there were no differences in the beliefs and practice of formative assessment regardless of their duration in service. We assume that the faculty development programmes organised by the university and the orientation programmes to new lecturers make them more knowledgeable and have awareness in best teaching practices. Other internal factors such as their positive attitude and conception of assessment to promote student's learning may influence their inclination towards formative assessment strategies. Successful adoption of formative assessment is also

highly attributed to the school policies and support. Effective formative assessment practices must be incorporated and aligned with curriculum and learning objectives (35,36).

## CONCLUSION

The findings of this study implied that the lecturers have a positive perception and conduct towards formative assessment in training medical students, irrespective of their level of experience in academia. It is strongly recommended that peer and self assessments be significantly enhanced to promote student's autonomy and accountability. An important implication for this study is how can the lecturers leverage formative assessment as a foundation for improving teaching and learning strategies. Further empirical research in this area is necessary and justified.

## ACKNOWLEDGEMENT

The authors would like to acknowledge all respondents for participating in this research.

## REFERENCES

1. Yudkowsky R, Park YS, Downing SM, editors. *Assessment in health professions education*. 2nd ed. New York: Routledge; 2019.
2. Black P, Wiliam D. Developing the theory of formative assessment. *Educ Asse Eval Acc*. 2009;21:5-31. doi: 10.1007/s11092-008-9068-5.
3. Dannefer EF. Beyond assessment of learning toward assessment for learning: Educating tomorrow's physicians. *Med Teach*. 2013;35(7):560-3. doi: 10.3109/0142159X.2013.787141.
4. Lim, Y. Students' perception of formative assessment as an instructional tool in medical education. *Med Sci Educ*. 2019;29:255-63. doi: 10.1007/s40670-018-00687-w.
5. Pat-El RJ, Tillema H, Segers M, Vedder P. Validation of assessment for learning questionnaires for teachers and students. *Br J Educ Psychol*. 2013;83(1):98-113. doi: 10.1111/j.2044-8279.2011.02057.x.
6. Sadler DR. Opening up feedback. In: Merry S, Price M, Carless D, Taras M, editors. *Reconceptualising feedback in higher education: Developing dialogue with students*. New York: Routledge; 2013. p. 54-63.
7. Almahal EA, Osman AA, Tahir ME, Hamdan HZ, Gaddal AY, Alkhidir OT, Gasmalla HE. Fostering formative assessment: Teachers' perception, practice and challenges of implementation in four Sudanese medical schools, a mixed-method study. *BMC Med Educ*. 2023;23:247. doi: 10.1186/s12909-023-04214-3.
8. Vygotsky LS. *Mind in society: The development of higher psychological processes*. Cambridge:

- Harvard University Press; 1978.
9. Gibbons P. Scaffolding language, scaffolding learning. 2nd ed. Portsmouth: Heinemann; 2014.
  10. Shepard LA. Linking formative assessment to scaffolding. *Educational Leadership*. 2005;63(3):66-70.
  11. Nasr M, Bagheri MS, Sadighi F, Rassaei E. Iranian EFL teachers' perceptions of assessment for learning regarding monitoring and scaffolding practices as a function of their demographics. Heidari-Shahreza MA, editor. *Cogent Education*. 2018;5(1). doi: 10.1080/2331186X.2018.1558916.
  12. Andreassen P, Malling B. How are formative assessment methods used in the clinical setting? A qualitative study. *Int J Med Educ*. 2019;10:208.
  13. Sharma S, Sharma V, Sharma M, Awasthi B, Chaudhary S. Formative assessment in postgraduate medical education - perceptions of students and teachers. *Int J Appl Basic Med Res*. 2015;5(Suppl 1):S66-70. doi: 10.4103/2229-516X.162282.
  14. Chen Q, Zhang J, Li L. Problematising formative assessment in an undeveloped region of China: Voices from practitioners. *Educ Asses Eval Acc*. 2021;33:649-73. doi: 10.1007/s11092-021-09369-5.
  15. Palmer EJ, Devitt PG. Limitations of student-driven formative assessment in a clinical clerkship. A randomised controlled trial. *BMC Med Educ*. 2008;8:29. doi: 10.1186/1472-6920-8-29.
  16. Andreassen P, Malling B. How are formative assessment methods used in the clinical setting? A qualitative study. *Int J Med Educ*. 2019;10:208-215. doi: 10.5116/ijme.5db3.62e3.
  17. Guadu ZB, Boersma EJ. EFL instructors' beliefs and practices of formative assessment in teaching writing. *Journal of Language Teaching and Research*. 2018;9(1):42-50. doi: 10.17507/jltr.0901.06.
  18. McQueen SA, Petrisor B, Bhandari M, Fahim C, McKinnon V, Sonnadara RR. Examining the barriers to meaningful assessment and feedback in medical training. *Am J Surg*. 2016;211(2):464-75. doi: 10.1016/j.amjsurg.2015.10.002.
  19. Al-Wassia R, Hamed O, Al-Wassia H, Alafari R, Jamjoom R. Cultural challenges to implementation of formative assessment in Saudi Arabia: An exploratory study. *Med Teach*. 2015;37 Suppl 1:S9-19. doi: 10.3109/0142159X.2015.1006601. PMID: 25803594.
  20. Meng H, Tang M, Wu M. Current situation on exam-oriented education in China and the outlook for quality-oriented education. In 2021 3rd International Conference on Literature, Art and Human Development (ICLAHD 2021) 2021 Nov 29 (pp. 325-331). Atlantis Press. doi: 10.2991/assehr.k.211120.060.
  21. Do Quyen NT, Khairani AZ. Reviewing the challenges of implementing formative assessment in Asia: The need for a professional development program. *Journal of Social Science Studies*. 2017;4(1):160-77. doi: 10.5296/JSSS.V4I1.9728
  22. Kuze MW, Shumba A. An investigation into formative assessment practices of teachers in selected schools in Fort Beaufort in South Africa. *Journal of Social Sciences*. 2011;29(2):159-70. doi: 10.1080/09718923.2011.11892966.
  23. Widiastuti IA, Mukminatien N, Prayogo JA, Irawati E. Dissonances between teachers' beliefs and practices of formative assessment in EFL classes. *International Journal of Instruction*. 2020;13(1):71-84.
  24. Heilporn G, Lakhil S, Bélisle M. An examination of teachers' strategies to foster student engagement in blended learning in higher education. *Int J Educ Technol High Educ*. 2021;18:25. doi: 10.1186/s41239-021-00260-3.
  25. Kayi-Aydar H. Scaffolding language learning in an academic ESL classroom. *ELT Journal*. 2013;67(3):324-35. doi: 10.1093/elt/cct016.
  26. Gonzalez de Sande JC, Godino Llorente JL. Peer assessment and self-assessment: Effective learning tools in higher education. *International Journal of Engineering Education*. 2014;30(3):711-21.
  27. Wanner T, Palmer E. Formative self-and peer assessment for improved student learning: The crucial factors of design, teacher participation and feedback. *Assess Eval High Educ*. 2018;43(7):1032-47. doi: 10.1080/02602938.2018.1427698.
  28. Iglesias Pérez MC, Vidal-Puga J, Pino Juste MR. The role of self and peer assessment in higher education. *Studies in Higher Education*. 2022 Mar 4;47(3):683-92. doi: 10.1080/03075079.2020.1783526.
  29. Hodgson P, Chan K, Liu J. Outcomes of synergetic peer assessment: First-year experience. *Assess Eval High Educ*. 2014;39(2):168-78. doi: 10.1080/02602938.2013.803027.
  30. Sulaiman T, Kotamjani SS, Rahim SS, Hakim MN. Malaysian public university lecturers' perceptions and practices of formative and alternative assessments. *International Journal of Learning, Teaching and Educational Research*. 2020;19(5):379-94. doi: 10.26803/ijlter.19.5.23.
  31. Marsh CJ. A critical analysis of the use of formative assessment in schools. *Educ Res Policy Prac*. 2007;6:25-9. doi: 10.1007/s10671-007-9024-z.
  32. Koloï-Keaikitse S. Assessment training: A precondition for teachers' competencies and use of classroom assessment practices. *International Journal of Training and Development*. 2016;20(2):107-23. doi: 10.1111/ijtd.12072.
  33. Pedder D, James M. Professional learning as a condition for assessment for learning. In: Gardner J, editor. *Assessment and learning*. London: Sage; 2012. p. 33-48.
  34. Schildkamp K, van der Kleij FM, Heitink MC, Kippers WB, Veldkamp BP. Formative assessment:

- A systematic review of critical teacher prerequisites for classroom practice. *International Journal of Educational Research*. 2020;103:101602. doi: 10.1016/j.ijer.2020.101602.
35. Izci K. Internal and external factors affecting teachers' adoption of formative assessment to support learning. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*. 2016;10(8):2541-8.
36. Van der Kleij FM, Cumming JJ, Looney A. Policy expectations and support for teacher formative assessment in Australian education reform. *Assess Educ*. 2018;25(6):620-37. doi: 10.1080/0969594X.2017.1374924.