

# Do We Really Understand What Formative Assessment Is? Examining the Formative Assessment Definitions Within the Measurement and Evaluation Textbooks\*

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## Abstract

This study aimed at examining definitions made for the formative assessment within textbooks used for the measurement and evaluation courses of the teacher training programs. It was identified that there are 32 books which are currently accessible and have suitable content for teacher training programs. Based on the measurement and evaluations experts' suggestions and publication dates of the books, the 17 out of 32 textbooks were selected for the study group. It was found out that the 17 textbooks focus on the two themes regarding the formative assessment: how to apply the formative assessment and utilize the outcomes provided by it. The results brought out that the textbooks provide information about various aspects of the formative assessment such as aim, planning, content, application, and feedback process. In addition, the results of the study revealed that textbooks used in teacher training programs for measurement and evaluation courses often contain definitions that include misconceptions and conflicting information compared to the established body of knowledge. This finding indicates that it is required to have textbooks including information on the formative assessment, which is consistent with the recent related literature and cognitive approach. Teachers also need textbooks guiding them towards appropriately applying the formative assessment in the classroom. In addition, instructors are recommended to be aware that most of the textbooks currently utilized in teacher training programs for the measurement and evaluation courses include important misconceptions about formative assessment.

*Keywords: formative assessment, misconceptions of formative assessment, educational assessment*

## Introduction

The concept of student achievement is among the most fundamental concepts within the education field. This concept has been updated in line with the theoretical changes in the fields of psychology and education. Since the 1960s, the concept of student achievement has been redefined aligning with the shift from behaviorism to cognitivism in education. The behaviorist approach accepts that a student is successful if she/he can memorize the information provided to her/him by the teacher and remember the information when needed. However, within the cognitive approach, the concept of student achievement has been updated in a way that students take more active roles in the learning process. The cognitivist theory admits that students are successful if they can apply their knowledge and skills to the problem situations they encounter and self-regulate their learning and motivation processes (Brookhart, 2020; Shepard, 2000).

The change in the definition of student success has required all essential components of the education system to be reconstructed in a way aligns with the updated definition of the concept. The effects of this change have also been observed in the field of measurement and evaluation, which is an important component of the education system (Kula-Kartal, 2022). Before the 1960s, a more conventional approach was dominant in the field of educational measurement. Within that conventional approach, the teaching and learning processes were kept separated from each other, assessing to what extent students can remember the information provided to them became the main aim of classroom assessments and

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students were compared to each other in terms of their recalling skills (Brookhart, 2020; McMillan, 2020; Shepard & Penuel, 2018). However, since the 2000s, a measurement approach which is more compatible with cognitivism and called formative assessment (FA) or assessment for learning has started to gain wide acceptance within the field (William, 2011, as cited in Panadero et al., 2018).

The FA is a process during which teachers and students collect information and evidence continuously and systematically with the aim of developing teaching and learning (Popham, 2011; Chappuis, 2009; Chappuis et al., 2013). As one can understand from the definition, assessment is accepted as a dynamic process within this approach. Different from the conventional measurement approach, teaching and learning are integrated processes in the FA. Students rather than teachers are at the center of the whole evaluation process. The FA process focuses on developing and monitoring students' high-order thinking skills instead of evaluating their recalling skills. It aims to improve students' goal-setting, self-monitoring, and decision-making skills. Unlike the conventional measurement approach, the FA puts emphasis on developing students' learning rather than comparing them to each other. To enable that, identifying each student's learning-related weaknesses and strengths and utilizing this knowledge and evidence to provide students with constructive feedback are at the forefront of the FA process.

The FA is a concept which has been in the spotlight of the classroom assessment literature for the last 20 years (Panadero et al., 2018). Nevertheless, some common misconceptions about what the FA is and how it should be applied still exist within the body of literature. Moss and Brookhart (2009) mention the most common three misconceptions about the FA in their book. One of them is to accept the FA as a special test type. The second one is to consider it as an intervention program. Another misconception is to suppose that all measurements providing information to improve teaching or curriculum can be counted as the FA. Similarly, Popham (2011) gave a place to a section focusing on what the FA is not in his book and addressed misconceptions about the concept. For instance, the writer states that instant decisions made by teachers based on their observations of students' behaviors or measuring students' low-level thinking skills frequently during the learning process do not define what the FA is. Supporting those misconceptions about the concept, in a study by Martinez and Martinez (1992; as cited in Black & William, 1998) the FA was conceptualized as testing students frequently. By referring to that study, Black and William (1998) expressed that it can be questioned to define the FA as simply testing students oftentimes. Brookhart and Helena (2003) put forward that the FA is a process integrated with the teaching and learning process and they remark another misconception about the FA, which is defining the FA as applying tests to the students at the end of each teaching unit or section.

The fundamental resources of the classroom assessment literature indicate that there are misconceptions about what the FA is, how it should be applied and how the results obtained from it should be used. The FA requires significant changes in teachers' perceptions about their own and students' roles in classroom assessment applications (Black & William, 1998; Leighton, 2020). However, the textbooks used for teacher training programs are still written under a conventional measurement approach rather than a cognitivist one that may trigger targeted changes in teachers' perceptions. A study by Shepard (2006) provided results supporting this claim. The researcher examined the textbooks utilized for measurement and evaluation courses of the teacher training programs between 1940 and 1990. The headings of chapters within the examined books revealed that the textbooks were written with a very technical and conventional point of view. When Shepard (2020) examined the recent books to explore the current situation, the researcher found out that the textbooks written with behavioristic approach still widely exist, and a limited number of books include chapters focusing on the FA.

In the related body of literature, the concept of FA has been discussed in detail. However, the classroom application of this measurement approach still needs improvement. One reason of this situation is that classroom assessment is still under the effect of the behavioristic measurement approach. This has caused many misconceptions about what the FA is. Shepard (2020) states that it is necessary to take into account this problem observed in the textbooks used for the measurement and evaluation course, which is one of the fundamental courses of the teacher training programs. Teachers' ability to carry out the FA applications appropriately within the classroom depends on teachers' understanding of what the FA is, how to apply it and how to use the results provided by it. Nevertheless, as stated by Black and William (1998), the concept of FA has not been understood properly by most teachers. As a result, classroom

application of the concept still needs development. The misconceptions about the FA were examined in some current international studies (Moss & Brookhart, 2009; Shepard, 2006; 2020; Popham, 2011). However, no study has examined so far how the FA process is defined within the textbooks used for measurement and evaluation courses of teacher training programs in Turkiye. Therefore, the aim of this study is to examine the FA definitions made in the measurement and evaluation textbooks.

## Method

### Research Model

The current study is a document analysis which aims to figure out how textbooks written in the field of measurement and evaluation define the FA and bring out misconceptions about it. Within document analyses, printed or electronic documents are examined and evaluated based on a systematic process (Bowen, 2009).

### Study Group

The study group consisted of 17 textbooks written within the field of measurement and evaluation. To specify the books included in the study group, the keyword “measurement and evaluation in education” was written on the search engine and the results were analyzed. When publishing firms and book-selling websites were reviewed, it was found that there are some books written many years ago in the field of measurement and evaluation and they are not accessible anymore. It was identified that 32 books are currently accessible and have suitable content for teacher training programs after excluding currently inaccessible books. The publication date of the books was used as a criterion in the process of selecting books from the book list and it was seen that 32 books were mostly published between 1981 and 2022. Most of the books were published between 2005 and 2015. The study group was identified after asking two measurement and evaluation experts’ opinions regarding to what extent the study group can represent the national measurement and evaluation literature. Accordingly, the two books published between 1980 and 2005, the 12 books published between 2006 and 2015, and the three books published between 2016 and 2021 were included in the study group.

### Data Collection and Analysis

In the current study, the document analysis was carried out with the aim of revealing how the FA is defined in the examined textbooks. The document analysis is a process including selecting the data from the documents, evaluating, and synthesizing the selected data. The document analysis process results in sections chosen from the data. The selected sections are organized under main themes and categories by conducting a content analysis process on the selected data (Labuschagne, 2003). The document analysis process of the current study was guided by the following steps suggested by Rapley (2007): a) selecting and generating the document archive based on the research questions, b) skeptically re-reading the document archive for several times, c) coding the documents in a way that will result in as inclusive schemes as possible, d) analyzing regularity and variability observed within the obtained scheme, and e) checking the validity of the results.

By following the steps mentioned above in the current study, the process started with generating a document in which all information given about the FA in the textbooks that was included in the study group. The first reading process of the document was guided by the common misconceptions addressed in the related literature (Moss & Brookhart, 2009; Popham, 2011), which are mentioned in the introduction part of the current study. In the second reading process of the document, different aspects of the FA which were commonly emphasized in the textbooks were entitled and classified under the two themes and seven categories. One of the two themes was the application process of the FA. The five categories revealed under this theme were aim, timing, planning, content of assessments, and classroom applications. The other theme was defined as using the results obtained from the FA process. The focus of the last step was to check the validity of the results. To enable that, the document was critically re-

read by the researcher one more time with the aim of evaluating the appropriateness of defined themes and categories. In addition, the whole document was shared with three measurement and evaluation experts and their opinions were received regarding the appropriateness, comprehensiveness and adequacy of the themes and categories organized by the researcher. The experts were given a form in which there are definitions and statements chosen from the textbooks and exemplifying the related categories entitled by the researcher. The experts were asked to put the statements defining the FA under the category which they find the most related with the relevant definition. The Fleiss' Kappa coefficient computed to examine the consistency among experts' opinions was 0,77. The Kappa coefficient indicated that there was a strong agreement among experts regarding to which category given definitions belong. After applying the necessary corrections based on the experts' opinions and recommendations the document analysis process was completed.

## Results

The aim of the current study is to reveal the definitions made for the FA in the measurement and evaluation textbooks. After examining the information given for the FA in the textbooks, the aspects that were commonly mentioned within the books were classified under two themes which are given in Table 1.

**Table 1.**

*The Aspects That Are Put Emphasis on In the FA Definitions Within the Measurement and Evaluation Textbooks*

The application process of the FA	Aim Timing Planning Content of assessments Classroom applications
Using the results obtained from the FA process	Feedback definition Feedback process

As it can be seen from Table 1, one of the two themes focuses on how the FA is carried out in the classroom. The other theme is about how to utilize the FA results. To examine the definitions covered within the two themes in more detail, firstly, the information given for the aim of the FA in the textbooks was analyzed and the results are given in Table 2.

**Table 2.**

*The Definitions Regarding Aims of The FA Within the Measurement and Evaluation Textbooks*

The Aims of FA	The textbooks
To reveal which and why learning targets within a learning unit were not acquired by students	A, 1981
To identify students' learning gaps and struggles within each learning unit and providing recommendations to each student to close the gaps	B, 1982
To discover learning gaps, struggles and misconceptions and evaluate the effectiveness of the teaching process	C, 2006
To specify and then remediate students' learning gaps before the teaching process ends	D, 2006
To monitor students' development, reveal their strengths and weaknesses, providing students feedback regarding their development	E, 2006
To identify and remediate the deficiencies occurred during the teaching and learning process	F, 2006
To monitor students' development continuously and identify their learning gaps	G, 2007
To specify and then remediate students' learning gaps	H, 2008
To identify to what extent students have acquired the learning targets and specify their learning difficulties when teaching and learning process is still proceeding, and to evaluate effectiveness of the teaching process	I, 2008
To determine the learning gaps and effectiveness of the teaching process	J, 2010

**Table 2.**

*The Definitions Regarding Aims of The FA Within the Measurement and Evaluation Textbooks (continued)*

To specify learning gaps and difficulties	K, 2012
To control whether the teaching program is carried out in line with the targets and plan during the teaching process	L, 2012
To define students' learning gaps, to determine the reasons causing the learning gaps, and take precautions to remediate the gaps	M, 2012
To identify and remediate students' learning gaps	N, 2014
To specify learning gaps and provide students with feedback regarding those gaps	O, 2019
To attain information on which learning targets students have difficulties or gained proficiency, to utilize the information to determine the next steps	P, 2021
To improve students' learning and teaching process, with this aim, to collect information and evidence about students' learning continuously and systematically	R, 2021

When Table 2 is examined, it is seen that one of the aims commonly stated within textbooks is “to identify students' learning gaps.” As presented in Table 3 below, within 14 books out of 17 books examined in the current study, the fundamental aim of the FA is accepted as specifying the learning targets on which students have learning gaps. Within the three out of 14 textbooks, to reveal the factors that might cause learning gaps was considered as another aim of the FA. In the eight textbooks, it was stated that the FA also aims at remediating the learning gaps. Lastly, another goal of the FA within the four textbooks was to determine the effectiveness of the teaching process.

**Table 3.**

*The Frequencies of Main Definitions Regarding Aims of the FA Within the Measurement and Evaluation Textbooks*

The aims of FA	The textbooks	Frequencies
To identify learning gaps	A, 1981; B, 1982; C, 2006; D, 2006; F, 2006; G, 2007; H, 2008; I, 2008; J, 2010; K, 2012; L, 2012; M, 2012; N, 2014; O, 2014	14
To identify causes of learning gaps	A, 1981; B, 1982; M, 2012	3
To remediate learning gaps	B, 1982; D, 2006; E, 2006; F, 2006; H, 2008; M, 2012; N, 2014; O, 2014	8
To identify effectiveness of teaching process	C, 2006; F, 2006; I, 2008; J, 2010	4
To provide information regarding teaching and learning	P, 2021; R, 2021	2
To develop both teaching and learning	P, 2021; R, 2021	2

According to Table 3, it can be stated that teachers have three aims to accomplish with the FA process: 1) to identify the learning targets on which students have learning gaps, 2) to remediate the learning gaps, and 3) to evaluate their teaching process. The first two of the three aims were commonly stated within most of the examined textbooks. Accordingly, the main aim of the FA is commonly defined as “to identify students' learning gaps and factors causing those learning difficulties” within the textbooks. The two main aims of the FA which are to provide information regarding the teaching and learning and to use that information to develop both teaching and learning were only mentioned within the two most recent books. The results obtained from examining the information about when to apply the FA in the classrooms within the textbooks are given in Table 4.

**Table 4.**  
*The Definitions Regarding When to Apply the FA Within the Measurement and Evaluation Textbooks*

When to Apply the FA	The definitions	The textbooks	Frequencies
To carry out the FA after completing teaching a unit or topic	After completing teaching units or topics	A, 1981	9
	At the end of units or sections requiring 1-2 weeks or 1-10 hours teaching processes	B, 1982	
	Before completing the instruction or continuing to the next topic	D, 2006	
	At the end of teaching units or after teaching several topics of a unit	F, 2006	
	At the end of a teaching unit and after completing topics.	G, 2007	
	After teaching several learning targets and before starting teaching new targets	J, 2010	
	Teaching and evaluation are integrated. Teachers first teach and then they evaluate what they teach	K, 2012	
	It is applied when teaching and learning activities are continuing. To enable that, it is carried out at the end of a class or unit.	N, 2014	
	It is applied when teaching is continuing. It is more appropriate to apply it after completing teaching a unit or topic.	O, 2019	
To apply FA in a continuous way during the teaching and learning process	When teachers and students are still in the teaching and learning process	P, 2021	2
	The FA is applied in a continuous and systematic way.	R, 2021	
No information	No information regarding when to apply the FA	C, 2006	6
		E, 2006	
		H, 2008	
		I, 2008	
		L, 2012	
		M, 2012	

Table 4 reveal that there is no information about when to apply the FA in the six textbooks. In 9 out of the remaining 11 textbooks, it is stated that the FA should be carried out after completing teaching a unit or topic. Within the more recent two textbooks, it is stressed that the FA is required to be carried out in a way that will provide continuous and systematic information when the teaching and learning processes are still going on. Another aspect commonly emphasized in the textbooks is about planning the FA. The information about how to plan the FA in the textbooks is given in Table 5.

**Table 5.**  
*The Definitions Regarding How to Plan the FA Within the Measurement and Evaluation Textbooks*

Planning the FA	The definitions	The textbooks	Frequencies
Unplanned and informal activities are accepted as the FA.	There are two types of evaluation carried out during the ongoing teaching process. One of them is the instant evaluation carried out by the teachers during the classes. Those instant evaluations help making instant decisions based on informal observations and inferences made for students' learning. Another one is more general. It is planned ahead when to apply it and which targets will be measured by the test.	G, 2007	4
	The FA process includes both the spontaneous evaluation applications and more formal and planned evaluations.	L, 2012	
	The FA can be carried out during the class by utilizing informal evaluation techniques such as questioning, observation. This type of evaluation provides quick and instant information for teachers about the effectivity of teaching.	O, 2019	
	The teaching and assessment process should be planned together. The evaluations which are not planned are informal evaluations. The informal evaluations become meaningful when they provide information regarding the targets acquired by students or the ones on which students need to be developed.	K, 2012	
Teaching and the FA processes are planed separately.	Firstly, all targets covered in the related unit are listed, and then, a test that will measure if each target is acquired by the students is developed.	A, 1981	3
	The targets of the unit aimed to evaluate are identified and listed from the curriculum.	F, 2006	
	After completing teaching a learning unit, if it is needed, the targets of the unit are identified and selected from the curriculum.	J, 2010	
The FA is a previously planned process and inform the daily decisions in the classroom.	The evaluation activities should be previously planned in a way that they can provide information for the daily and weekly decisions of teachers and students.	P, 2021	2
	Teacher should design a planned and systematic FA process and apply it to monitor students' development and provide them on-time feedback.	R, 2021	
No information	No information regarding how to plan the FA.	B, 1982 C, 2006 D, 2006 E, 2006 H, 2008 I, 2008 M, 2012 N, 2014	8

Table 5 reveals that the 8 out of 17 textbooks do not include any information about when or how to plan the FA. When the information given in the remaining nine books was examined, it is understood that the books put emphasis on two points on this issue. One of them is that there are two types of FA which are entitled as formal and informal evaluation. In four textbooks, teachers' questioning, observation and adjusting the teaching based on students' reactions during the class is accepted as a part of the FA.

Within these books, those unplanned and instant activities are entitled as informal evaluations. Another point about planning of the FA within the three textbooks is that teaching and the FA processes are planned separately. According to the information given in those books, teachers first plan the teaching process and apply it. After completing teaching, they plan how and when to assess students. For example, in one of the books, it was stated that “After completing teaching a learning unit, if it is needed, the targets of the unit are identified and selected from the curriculum.” This information implies that teachers plan the FA process after completing the relevant teaching unit. The more recent two textbooks emphasized that the FA is planned at the beginning of teaching process so that it can inform daily decisions made by teachers and students in the classroom. The results obtained from examining information about the content of the FA are given in Table 6.

**Table 6.**

*The Definitions Regarding Content of the FA Within the Measurement and Evaluation Textbooks*

Content of the FA applications	The definitions	The textbooks	Frequencies
All learning targets covered in a unit should be measured in a unit test in the FA application.	All the learning targets covered by the unit should be measured at the end of the unit.	A, 1981	6
	A unit test should cover all critique learning targets. There should be at least one item measuring each target covered in the unit.	B, 1982	
	It is necessary to evaluate all targets covered in the unit in the FA application.	F, 2006	
	To apply the FA appropriately, all learning targets of the unit should be measured. A follow-up test including many items, requiring students to give short answers, and covering all the targets of the unit should be developed and applied.	G, 2007	
	In a FA application, it is necessary to measure all targets taught within a learning unit.	J, 2010	
	In the FA application, all learning targets covered in a unit are measured.	N, 2014	
The FA applications should focus on monitoring students' higher order thinking skills.	In the FA application, various measurement tools and techniques such as paper-pencil test, projects, performance tasks, and portfolios can be used to obtain information about student's learnings. It is especially recommended to use the FA to monitor skills taking long time to be developed.	R, 2021	1
No information	No information regarding the content of the FA application	C, 2006 D, 2006 E, 2006 H, 2008 I, 2008 K, 2012 L, 2012 M, 2012 O, 2019 P, 2021	10

According to Table 6, the 10 textbooks do not include any information regarding the measurement tools that can be used in the FA process or the content of the tools. Within the remaining seven textbooks, it is reported that all learning targets covered in a unit are required to be measured with at least one item in the FA application. In addition, one textbook emphasizes on using a follow-up test consisting of many items measuring all the targets of the unit and requiring students to give short answers. This information implies that the FA applications are carried out by using a unit test including at least one selective or short-answer item measuring each learning target covered in the unit. Within a more recent textbook, it

is stated that various item types can be used to gain information about students' learning in the FA process. Furthermore, within the same textbook, it is recommended to focus on monitoring higher-order thinking skills taking a long time to develop rather than measuring all the targets in a unit. The information given on how to apply the FA in the textbooks is given in Table 7.

**Table 7.**

*The Definitions Regarding How to Apply the FA in the Classroom Within the Measurement and Evaluation Textbooks*

Applying the FA	The definitions	The textbooks	Frequencies
The FA is measurement activities applied frequently during the teaching and learning process.	Teachers can evaluate learning or the effectivity of teaching by repeatedly measuring students' current learnings on the targets.	D, 2006	6
	Students should be evaluated on specific times of the teaching process and there should be short intervals between the evaluations	F, 2006	
	The FA applications should be carried out frequently during the academic year.	J, 2010	
	The FA applied frequently and on time enables developing students' learning. Teacher controls the development of students' learning based on frequent evaluations	K, 2012	
	The learning targets on which students have learning gaps are identified based on the tests applied frequently.	L, 2012	
	The FA is applied more frequently than other types of evaluation.	O, 2019	
The FA is applied by utilizing a unit test.	The results obtained from the follow-up tests applied at the end of a teaching unit are utilized to reveal students' learning gaps and the factors caused those learning difficulties.	A, 1981	11
	The tests used in the FA process are called as formative tests or unit tests.	B, 1982	
	Teacher can evaluate learning or effectivity of teaching by comparing students' learnings in each learning unit during the term.	D, 2006	
	Students are generally evaluated at the end of a teaching unit by using a follow-up test or a unit test.	F, 2006	
	Teacher can evaluate students' learning by utilizing tests called with different names such as learning, unit, formative or pop-up tests.	G, 2007	
	Teachers are required to use measurement tools and techniques like pop-up quizzes, follow-up tests, observation, and interview for the FA	I, 2008	
	After teaching several related learning targets and before starting to teach new ones, a measurement tool measuring students' learnings on each learning target covered in the specific section or unit should be developed.	J, 2010	
	Quizzes and unit tests are the FA.	L, 2012	
	The tests used for FA are called as follow-up or formative tests.	M, 2012	
	The unit tests or quizzes are applied on students for the FA. The first thing to remember when one says the FA is the tests applied at the end of a teaching units.	N, 2014 O, 2019	

**Table 7.**

*The Definitions Regarding How to Apply the FA in the Classroom Within the Measurement and Evaluation Textbooks (continued)*

To apply the FA means more beyond than frequently measuring students. The unit tests cannot be defined as FA applications.	The formative power an evaluation applied after completing teaching a unit is weak because learning and teaching process for the relevant unit has already been completed.  To measure students' learning on each unit during the teaching process does not mean that the teacher carried out the FA process. The FA is not to simply measure students' learning frequently.	P, 2021  R, 2021	2
No information	No information regarding how to apply the FA	C, 2006 E, 2006 H, 2008	3

Table 7 indicates that the textbooks commonly emphasize the two points about the classroom application of the FA. Within the six textbooks, the FA is defined as measuring students' learning frequently when the teaching and learning process is still going on. Another definition regarding how to apply it is that the FA is associated with utilizing a follow-up test at the end of each unit. 11 out of 17 textbooks include information indicating that the FA means to apply a follow-up test measuring to what extent students have acquired the learning targets covered by the relevant unit. Within two textbooks, it was stated that to apply unit tests at the end of a unit does not mean that the teacher carried out the FA process; on the contrary, the formative power of these kinds of applications will be weak since the teaching and learning processes have already been completed. The information regarding the theoretical definition of feedback within the textbooks is given in Table 8.

**Table 8.***The Definitions Regarding the Feedback in the FA Within the Measurement and Evaluation Textbooks*

Feedback in the FA	The definitions	The textbooks	Frequencies
Informing students about their learning gaps	To let students learn all learning gaps they have within a unit	A, 1981	9
	Students should be informed about their mistakes and learning gaps. Their mistakes should also be corrected.	B, 1982	
	Teachers can detect what students' learning gaps are on time thanks to the FA.	C, 2006	
	In the FA, not only the learning gaps of individual student but also the learning gaps of whole group are identified.	F, 2006	
	During learning process, students may have learning gaps on some targets. The learning gaps are required to be accomplished. To enable that they must be identified first. The identification of the learning gaps is evaluation.	J, 2010	
	In the FA, not only the learning gaps of individual student but also the learning gaps of whole group are identified.	L, 2012	
	In the FA, not only the learning gaps of individual student but also the learning gaps of whole group are identified.	M, 2012	
	In the FA, not only the learning gaps of individual student but also the learning gaps of whole group are identified.	N, 2014	
The fundamental aim of the FA is to detect students' learning gaps.	O, 2019		

**Table 8.**

*The Definitions Regarding the Feedback in the FA Within the Measurement and Evaluation Textbooks (continued)*

Informing students about both their accomplishments and learning gaps	Test results inform students about what and to what extent they have learned.	E, 2006	4
	The FA applications provide information about students' strengths and weaknesses.	K, 2012	
	The FA provides information for both teachers and students on which targets students are already competent and the ones on which they still need to develop.	P, 2021	
	Not only monitoring but also developing learning is aimed in the FA. To enable that, teachers inform students about both their strengths and weaknesses. In addition, the teacher gives suggestions to students to provide them with guidance towards accomplishing learning gaps.	R, 2021	
No information	No information regarding what feedback is	D, 2006 G, 2007 H, 2008 I, 2008	4

Table 8 reveals that four textbooks do not include any information regarding what feedback is. The feedback is defined with an emphasis on identifying learning gaps within the 9 out of the remaining 13 textbooks. In these textbooks, it is not mentioned to inform students about the targets on which they are already competent. In most of the textbooks, the feedback is defined based on identifying learning targets on which students have difficulties and informing students about their learning gaps. Students' need to be informed about the targets on which they are already competent in addition to the ones on which they need to develop is mentioned within the 4 textbooks. These results indicate that the feedback in the FA process is mostly accepted as informing students about their learning gaps within the examined textbooks. The information included in the textbooks regarding the feedback process is given in Table 9.

**Table 9.**

*The Definitions Regarding the Feedback Process in the FA Within the Measurement and Evaluation Textbooks*

The feedback process in the FA	The definitions	The textbooks	Frequencies
The feedback in the FA is a teacher-centered process in which the results provided by the FA are mainly used by teachers.	Teachers should prompt students to participate in supplementary learning activities after they inform students about their learning gaps.	A, 1981	10
	If teachers observe a common learning gap among most of the students, they carry out a supplementary teaching process. If a learning gap is observed among a small group of students, teachers can follow various solutions such as making students do group work or read additional materials.	B, 1982	
	Teachers can take necessary precautions to take account the related factors cause students to have learning gaps when they review their teaching processes based on the results obtained from the FA.	C, 2006	
	Teachers are required to fulfill common learning gaps observed among most of the students.	D, 2006	
	Teachers are expected to fulfill students' learning gaps and consider the effectivity of their teaching processes.	E, 2006	
	Teachers can adjust their teaching plans based on the results obtained from the FA for their later applications. They can make additional activities to fulfill students' learning gaps.	F, 2006	

**Table 9.**

*The Definitions Regarding the Feedback Process in the FA Within the Measurement and Evaluation Textbooks (continued)*

	It is teacher's responsibility to identify students' learning gaps. Teachers plan supplementary teaching activities to fulfill the gaps. In addition, they correct their own deficiencies in their teaching plans and applications.	J, 2010	
	Teachers try to fulfill learning gaps by carrying out personal or group-level supplementary teaching activities.	L, 2012	
	The learning gaps identified based on the FA results are fulfilled through additional personal activities or supplementary precautions.	N, 2014	
	In the FA, it is required to identify students' learning gaps and then fulfill those gaps.	O, 2019	
The feedback in the FA is a process in which students can utilize the FA results to self-evaluate and provide feedback to themselves.	Students should be given chances for self-evaluation. Teachers should be in direct and one-to-one communication with the students during the feedback process.	K, 2012	
	Teachers guide students towards developing their learning by using the results provided by the FA. Students set goals for themselves based on their self-evaluations and teacher's feedback and monitor their own development according to their goals.	P, 2021	3
	Student self-evaluate their development based on the results provided by the FA. Teachers inform students about their strengths and weaknesses and suggest students new methods and strategies to develop their weaknesses.	R, 2021	
No information	No information regarding the feedback process	G, 2007 H, 2008 I, 2008 M, 2012	4

Table 9 shows that the four textbooks do not give any information for the feedback process. Within 3 out of the remaining 13 textbooks, it is mentioned that students can utilize the FA results to self-evaluate and provide feedback to themselves. The remaining 10 textbooks have a teacher-centered feedback approach. The feedback process is simply explained in the textbooks as follows: a) the teacher carries out an additional supplementary teaching if a common learning gap is observed among most of the students, b) the teacher prompts students to small group or personal studies and additional readings if a learning gap is observed among a small group of students. Based on the information given for the feedback processes, it is understood that there is a common agreement among textbooks on that the FA results are mainly used by teachers.

### Discussion

In the current study, the recent 17 textbooks widely utilized for the measurement evaluation courses of teacher training were examined to reveal the definitions made for the FA. Based on the examination of the books, it was found that the FA is discussed under a behavioristic approach in all books except for the more recent two textbooks. In the textbooks, the FA is defined as follows: the FA is carried out after completing the teaching process of the related unit, a follow-up or unit test is applied to students, this unit test includes items measuring all learning targets covered in the related unit, students are informed about the learning targets on which they have learning gaps, the teacher moves on the next teaching unit if the majority of the class succeeded the test, the teacher carries out additional supplementary teaching activities for the learning targets on which most of the students have learning gaps, and the teacher adapts the teaching process she/he followed for those targets in the future.

As mentioned above, it was revealed that the textbooks put emphasis on how to apply the FA and utilize the results provided by it. In most of the books, the FA is associated with applying unit test on students. This finding is parallel with the related literature. According to Moss and Brookhart (2009), the most common misconception about the FA is to consider it as a test used to reveal what students have learned.

Whereas the FA is a process in which teachers and students collect information with the aim of developing students' learning and adapt their decisions based on that information.

The textbooks commonly state that the FA is carried out after completing the teaching of a unit. This indicates an underlying measurement approach in which teaching and measurement are considered as separate processes. Supportively, Brookhart and Helena (2003) point out that measurement specialists are likely to accept evaluation as something separate from the teaching process. However, the main condition to accept the evaluation as formative is that the evaluation ought to provide information while the learning process is still going on. Therefore, the evaluation should take place in the middle of the teaching and learning process rather than applying it at the end of a learning unit (Shepard, 2000). Chappius et al. (2013), by attracting attention to this misconception, express that the formative power of the evaluation is going to be weak if the evaluation does not meet the two following conditions: 1) the evaluation is carried out on appropriate time that will provide chances for students to take actions, 2) both teachers and students can take actions based on the FA results. The end of a unit is too late to take action because the teaching and learning process of the related unit has already been completed. Supportively, Ferrara et al. (2020) state that when teachers apply unit tests on students, they aim at evaluating to what extent students have learned at the end of the unit rather than targeting to develop teaching and learning.

It is pointed out within the textbooks that there are two types of FA: formal and informal. The instant and spontaneous decisions made by teachers based on their classroom observations are entitled as informal evaluation and accepted as the FA. This acceptance is a misconception about the FA because teachers' instant classroom decisions are not the FA. Supportively, Popham (2011) explains that a teacher can teach a specific concept using a different teaching method if the teacher notices that the majority of students are having difficulty in comprehending the concept based on his or her classroom observations. Those kinds of instant decisions are good since they enable to adapt teaching, but this is not the FA. According to him, the FA is carried out based on a plan instead of instant decisions.

In some textbooks, the FA is defined based on unit tests measuring all the targets covered in the unit and including items requiring students to select or give short answers. It can be stated that there are two misconceptions regarding the content and application of the FA within the books. One of them is to focus on students' recalling skills. Popham (2011), drawing attention to this misconception, considers that it is meaningful to utilize the FA to monitor students' skills taking a long time to be develop such as critical thinking or problem-solving. Another misconception is to consider that the FA includes only traditional item types such as multiple-choice items. Whereas the FA process comprises all measurement methods (performance tasks, portfolio etc.) providing necessary information about students' learning development (Kula-Kartal, 2021).

The sections explaining how to use results provided by the FA within the textbooks mostly focus on what feedback is. The feedback is defined based on informing students about their learning gaps in most of the books. From this point of view, the feedback means checking how much information or concepts can be recalled or comprehended by students. In addition, the feedback simply means to inform students about their correct and wrong answers. Shepard (2000) accepts that the behavioristic approach caused unsophisticated feedback definitions observed in the books. In the FA, the fundamental aim is to develop students' learning. However, to inform students about the score they need to gain to be accepted as competent on a learning target is not a type of feedback that can help them develop their learning. To help students develop their learning, it is necessary that the feedback should answer the questions asked by teachers and students like "What are the learning targets? To what extend have we progressed towards the targets? What should be done for a better progress?" during the teaching and learning processes (Hattie & Timperley, 2007). In formative feedback, teachers compare students' performances with criteria defining expected performance. They identify which criteria are accomplished and which ones are not met by the performance. They suggest new methods to develop weak aspects of students' performances. Thus, the feedback enables students to have a view regarding their own performance and creates an opportunity for development (Moss & Brookhart, 2009).

Within the textbooks, the dominant perspective is that teachers are mostly the ones who utilize the results provided by the FA. The teacher has the role of making decisions to develop teaching or learning

based on the assessment results in most of the books. However, some researchers think that the teacher-centered feedback process is not appropriate for the FA. For example, Brookhart and Helena (2003) express that the following conditions should be met by the feedback to be accepted as formative feedback: Firstly, students should comprehend what the criteria defining the expected performance mean. Secondly, students should monitor their own performance and compare it with the criteria. Thirdly, they should take action to lessen the gaps between their performances and criteria. Student is in the center of this formative process because she/he is the only person that can take the necessary actions to develop learning. To help students evaluate their own performances and provide themselves with internal feedback rather than providing external feedback to them form the foundation of the FA. Therefore, self-evaluation is an important component of the FA (McMillian, 2020; Panadero et al., 2018).

It was aimed to examine definitions made for the FA in the measurement and evaluation textbooks within the current research. It was found that the 17 textbooks examined focus on two themes: how to apply the FA and utilize the results provided by it. The results brought out that the definitions provide information about various aspects of the FA such as aim, planning, content, application, and feedback process. In addition, the results of the current study revealed that in the textbooks used for measurement and evaluation courses of teacher training programs, there are some definitions including misconceptions and conflicting information with the related research as discussed in this section. This finding indicates that it is required to have textbooks including information regarding the FA that is consistent with the recent related literature and cognitive approach. Teachers also need textbooks guiding them towards appropriately applying the FA in the classroom. In addition, textbooks and sources including appropriate information about the FA can contribute to both measurement and evaluation literature and teachers' classroom applications. In addition, instructors are recommended to be aware that most of the textbooks currently utilized for the measurement and evaluation courses of the teacher training programs include important misconceptions about the FA. Therefore, it is important to critically review the sources they used for their courses.

## Declarations

**Conflict of Interest:** No potential conflict of interest was reported by the author.

**Ethical Approval:** The published textbooks were examined in this study. Therefore, ethical approval is not required.

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