

Practicing Formative Assessment for Betterment: A Content Analysis

* Nadia Ejaz

** Aneela Alam (Corresponding Author)

*** Tanzeela Alam

Abstract



Formative assessment aims at providing teachers the feedback for the modifications of the learning experiences that they give to students. This study aimed at exploring how formative assessment has been used for improving the quality of teaching-learning process over the past five years. Content analysis of 50 studies relating to formative assessment (published from 2015 to 2020) has been done in this study. Two research objectives were formulated that includes: To identify the practices of FA “formative assessment”. Second objective was to explore the current research trends in the area of practicing formative assessment for betterment. To search for the studies relevant to formative assessment, search engines such as Google, ERIC, Google scholar and Academia was utilized. The data was analyzed under ten sub-categories i.e study type, study years, sampling, study locations, tools used, research methods, data analysis procedure, variables and results. The results of the study showed that teachers with higher Continuous Professional Development (CPD) participation have stronger beliefs in formative assessment than with lower Continuous Professional Development (CPD) participation.

Keywords: Formative Assessment, Content Analysis, Trends, Pakistan

Introduction

Formative assessment is a type of assessment which takes place during instruction or process (Crooks, 2001). It is done for monitoring students’ progress in learning as it is called an assessment for learning (Shepard, 2017). Both teacher and students get feedback from formative assessment. Students identify learning errors and misconceptions while teachers come to know through this type of assessment regarding the methodology with which their teaching is effective or not (Brazeal, Kathleen & Brian, 2017). Little (2018) shared that during the teaching or learning, formative assessment provides us an opportunity to continuously employ checks and balances. In his article, Scriven (1967) introduced the term “formative assessment”. To him it provides information for successive adaptation when the programme is in the phase of development or implementation. In 1968, Benjamin Bloom used the term formative assessment in his book “Learning For Mastery” (Bloom, 1971). He said that through this tool teaching and learning process can be improved. Scriven and Bloom both were of the opinion that calling this assessment “formative” is only for the reason that through this assessment subsequent decisions regarding educational process are altered.

Cronbach (1963) gave an idea to use evaluation (as a tool) for the improvement of a curricular program. His work was extended by Scriven (1967), who proposed this term as a mean to clarify evaluation’s roles. Scriven’s definition was applied by Bloom in the teaching-learning process. He used the term “formative” describing it a way to improve student’s learning. The creation of learners who leave school with the confidence that they can learn continuously through out their lives is the purpose of assessment for learning. Formative assessment aims at providing teachers the feedback for the modifications of the learning experiences that they give to students and also to correct their shortcomings (Cauley & McMillan, 2010; Din, Faizi & Khan, 2018). It can be said that it is a shift of focus from process of learning to the reduction of negative impact or improving self-efficiency.

Formative assessment also improves students’ cognitive awareness of how they teach (Reddy, Dudek & Lekwa, 2017). It improves both the instruction and the focus of students on progress (Black & William, 2009). Having the potential for improving teaching-learning process, formative

* Email: nadiadatu333@gmail.com

** Fatima Jinnah Women University, the Mall, Rawalpindi Email: aneekalam92@gmail.com

*** Email: talamkhattak@yahoo.com

assessment has been recognized internationally as an approach of instruction (Huhta & Ari, 2010). Teachers can do it informally, when the purpose is not to give grades to students that is used only for getting information about student's learning progress (Van der Nest, Long, Engelbrecht, 2018). It may be in the form of direct questions, white/black board demonstration, and discussion (Elmahdi, Al-Hattami & Fawzi, 2018). Through this process, a teacher is in a better position to have information about students' previous knowledge and also its level. On the basis of this assessment, teachers take decisions to modify or change the instruction so that students may succeed in planned instruction (Black, Paul & Dylan, 1998; 2003).

Suitable lessons and learning activities can be created for groups or individual learners (Fook & Chan Yuen, 2013; Ogange, Betty, John Agak, Kevin Okelo & Peter Kiprotich, 2018). Students may be informed by their teachers regarding the progress so that they can be helped (Black & William, 2010). In return, after having developed the self-evaluation skill, students take responsibility of their learning (Kulasegaram, Kulamakan, & Patangi, 2018), learn goal setting (Laight, Asghar & Aslett-Bentley, 2010) and are intrinsically motivated. Formative assessment is used to discover pupil understanding (Hussain, Shaheen, Ahmad & Islam, 2019). It also helps teachers in taking decisions to enable students develop their understanding (Heick, 2008; Morze, Vember & Varchenko-Trotsenko, 2017).

This study aimed at exploring how formative assessment has been used for improving the quality of not only the evaluation process but also of the whole teaching-learning process. In this regard, the purpose of this study was to gather maximum evidence to explore the current research trends in the context of formative assessment through Content Analysis. Some research questions were formulated that helped in summarizing the already done work from 2015 to 2020. It might help all the stakeholders to come to know about the potential benefits of practicing formative assessment. This study can be considered as a baseline study that might be used as reference study by the future researchers. While keeping in view this perspective, the current research study was an endeavor to answer the questions listed below regarding the past studies focusing on formative assessment between 2015 and 2020 in Pakistan and abroad.

Statement of the problem

The aim of this study is, on the basis of the previous studies through content analysis, to identify the practice of assessment in classroom. This research would be beneficial for students and school community as it will determine the effects of the practices of formative assessment on students' achievement.

Research Objectives

Generally, the focus of this study is to present a content analysis of the practicing formative assessment for betterment.

1. To identify the practices of FA "formative assessment" for betterment by taking help of previously done work since 2015 to 2020.
2. To explore the current research trends in the area of practicing formative assessment for betterment.

Research Questions

- What is the year wise distribution of the studies (2015-2020)?
- What is the location wise distribution of the studies?
- What dependent variables are used in this study?
- What type of research has been conducted (Article or Thesis)?
- What methods of research has been used in the studies?
- What sizes of sample has been used in past studies?
- What tools for collecting data were employed in the past studies?
- What type of procedures for analyzing data are used in the studies?
- At which level the study was conducted?
- What are the major findings presented in the studies?

Significance of the study

Formative assessment as assessment for learning holds a very vital position in teaching and learning process. By this assessment teaching and learning can be improved as it gives feedback to both the teacher and the students. So, this content analysis of the studies conducted from 2015 to 2020 on

formative assessment, is of great importance as it explored 1- the changes that teachers made in formative assessment procedures during this period. 2- new activities used by the teachers for this type of assessment. 3- the challenges faced by the teachers in connection with formative assessment. On this very vital information obtained through this study, decisions can be made by authorities to improve the teaching and learning process to help both the teachers and the learners.

Methodology

Research Design

Content analysis of 50 studies related to formative assessment (published from 2015 to 2020) has been done in this study. Content analysis is a research design used to find out the presence of definite words or ideas within texts or sets of texts. The reason of choosing content analysis is that, it will help the reader to get in-depth knowledge about the research trends in that specific area as it will summarize and present all the previous work at one place. It will also help in identifying the existing gaps in the literature on the basis of which future studies can be planned.

Data Collection Tool

For the collection of information, the Research Classification Form (RCF) was used that comprised of different components. A major table was made keeping RCF in view that helped in further data analysis. It provided the information to identify the research regarding the title, publication date, variables, context, method of research, sample, tools for collecting data, types of analyzing data and results.

Sample

The current study investigated 50 studies that had been conducted from 2015 to 2020 on using formative assessment. The sample was limited to only open access studies. Only 50 studies were found relevant through different search engines such as Google, ERIC, Google scholar and Academia. Only those studies were included that particularly focused on practicing formative assessment. In order to find the relevant articles ‘Assessment, Formative Assessment, Practicing formative assessment, implementing formative assessment type key words were searched.

Data Analysis

The content of every study was reviewed and analyzed the results by using descriptive statistics. It is showed in tables (frequency and percentage) for interpreting themes and obtaining the categories of FA “formative assessment” that were most frequently employed.

Findings

Listed below the findings of the studies on formative assessment from 2015 to 2020.

Years	Articles	Theses	N
2015	2	3	5
2016	5	3	8
2017	6	5	11
2018	10	2	12
2019	8	2	10
2020	3	1	4
Total	33	17	50

Table 1.1 Year wise data of the studies published between 2015 and 2020

The table 1.1 shows the frequency distribution of studies from 2015 to 2020 in different context. Increase in number of the studies has been seen from 2016 onward.

Institute	N	Context
University of Swat	1	Pakistan
Hamdard University Karachi	1	
University of Swat, Khyber Pakhtunkhwa, Pakistan	1	
Polytechnic of Porto	1	Portugal
Stockholm University	1	Sweden
Uludağ University Turkey	1	Turkey
Yeditepe University,	1	Turkey
Prince Sattam Bin Abdul-Aziz University	1	Saudi Arabia
University of South Africa	1	South Africa
Walter Sisulu		
Maseno University	1	Kenya

International Medical University, Malaysia	1	Malaysia
University Sains Malaysia	1	
University Pendidikan Sultan Idris, Malaysia	1	
University Technology Malaysia	1	
University of Kassel and Leuphana	1	Germany
University Medical Center Hamburg-Eppendorf, Hamburg, Germany	1	
University Medil Center Hamburg-Eppendorf	1	
University of Luneburg	1	
University of Melbourne	1	Australia
Curtin University, Australia	1	
Northwest Missouri State University	1	USA
Walden University	1	
Rīga Stradiņš University	1	London
Golan Research Institute	1	Israel
Open University of the Netherland, Heerlen	1	Netherlands
University of Twente, Netherland	1	
Open University of the Netherland	1	
University of Alberta, Edmonton	1	Canada
University of Florence,	1	Italy
Boris Grinchenko Kyiv University	1	Ukraine
Boris Grinchenko Kyiv University	1	
University Negeri Malang	1	Indonesia
SMP Al Zahra	1	
University Pendidikan Indonesia Bandung	1	
University of Pendidikan Indonesia	1	
University of Prishtina	1	Kosova
James Cook University	1	Singapore
Temasek Polytechnic	1	Iran
University of Isfahan	1	
Kharazmi University, Iran	1	
Ilam University	1	
Islamic Azad University, Karaj	1	
The British in Duabi University	1	UAE
University of Leeds	1	UK
University of Birmingham, UK	1	
University of Gent	1	Mozambique
Bowling Green State University	1	Ireland
University of Oxford	1	England
Beirut Arab University, Beirut	1	Lebanon
University of Applied Sciences And Arts Northwest, Switzerland	1	Switzerland
University of Catalonia	1	Spain

Table 1.2 Number and location of the studies

As seen in Table 1.2, Malaysia (N=5) is the country where the most studies on practice of formative assessment were conducted. Then Pakistan (N=3), and Turkey (N=3), Portugal (N=1), South Africa (N= 2), Australia (N=2), USA(N=3), Iran (N=3), Netherland (N=3), Ukraine (N=1), Singapore(N=2), Indonesia(N=3), Switzerland (N=1), Ireland (N=1), England (N=1), UK(N=1), Mozambique (N=1), UAE(N=1), Kosova (N=1), Canada (N=1), Israel(N=1), Saudi Arabia (N=2), Germany(N=2), Sweden(N=1), Kenya(N=1), London (N=1), Lebanon(N=2), Spain(N=1) (

Research Methods	Articles	Theses	N
Quantitative-	14	11	25
Qualitative-	15	4	19
Mixed-	4	2	6
Total -	33	17	50

Table 1.3 Research methods used in the past studies

The data presented in Table 1.3 showed that trend is to use quantitative research method (N=25) followed by quantitative method (N=19). However, the mixed method research is also gaining popularity in this context gradually.

Data collection tools	No
Interview	9
Questionnaires	34
Observation	7
Total	50

Table 1.4 The data collection tools used in the studies

Table 1.4 shows that questionnaire was the instrument used most of the time (N= 34), interviews (N=9), and observation (N=7). Percentage values were not calculated as more than one tool of data collection were used in a single study.

Sample Groups	No
Primary level	--
Secondary level	20
Higher Education Level	30
Total	50

Table 1.5 The level at which the studies were conducted

Table 1.5 shows that researchers mostly conducted their studies at higher education level (N=30) followed by secondary level (N=20). However, it has been found that studies related to practicing formatting assessment at primary level from 2015-2020 is not on the record.

Sample Sizes	N
<50	43
51-100	10
100<	6
Total	50

Table 1.6 Sample Size

In majority of the studies samples was of less than 50 participants (N= 43). Yet, the studies were not carried out with larger sample size that is above 100 (N= 6).

Dependent Variable	N
Academic Performance	2
Improvement of the process of teaching and learning	5
Online Learning Environment	5
Improve students' learning	4
To Support Student' Competences in Inquiry-Based Science Education	7
Academic writing	2
Interpersonal-Interpretive Performance	7
Feasibility	1
Active Learning decision	2
Making evaluative practices	3
Training assessment	4
Training processes	5
Collaboration	3
Total	50

Table 1.7 Dependent variables of the studies

In the studies, the effects of the formative assessment on different variables were usually investigated. The dependent variables of the studies on the formative assessment were displayed in Table 1.7 which are academic performance (N=2), Improvement of the process of teaching and learning(N= 5), Online learning environment(N= 5), Improve student's learning(N=4), To support student competences in Inquiry-Based Science Education (N=7), Academic writing (N=2), Interpersonal-interpretive Performance (N=7), Feasibility(N=1), Active learning decision(N=2), Making evaluative practices(N=3), Training assessment(N=4), Training processes (N=5), Collaboration(N=3).

Data analysis	N
Descriptive Frequency-Percentage	2
(Mean/S D)	20

		(Graphic Display)	-
	Inferential	(T-test)	8
		(Correlation)	6
Quantitative Data Analysis		(ANOVA-ANCOVA)	4
		(MANOVA/MANCOVA)	2
		(Factor Analysis)	1
		(Regression)	1
		(Chi-Square)	1
		(Non-parametric Test)	-
	Subtotal		43
Qualitative Data Analysis		(Content Analysis)	4
		(Qualitative Descriptive Analysis)	3
	Subtotal		7
Total			50

Table 1.8 Methods used for data analyses

In majority of the studies (N=43) quantitative data analysis was used, on the other hand (N=7) are used as qualitative analysis procedures. More accurately, mean and SD (standard deviation) (N=20) were the most common descriptive analysis procedures. About inferential analysis, the use of t-test (N=08) appeared to be most common procedure though, the number of more complicated analysis procedures such as MANOVA/MANCOVA, factor analysis and regression were quite low. As for the qualitative analysis types, content analyses (N=04) was establish to be used more frequently compared to descriptive qualitative analyses (N=03).

Study Type	N
Article	33
Thesis	17
Total	50

Table 1.9 Type of the research (Article or Thesis)

In relation to the type of the studies published from 2015 to 2020, Table 1.9 shows that majority were the articles (N= 33) followed by thesis (N= 17)

Results	N
Formative Assessment improves Students Learning	4
Formative Assessment improve quality of teaching learning	2
Interpersonal-Interpretive Performance	7
Formative Assessment helps improves Academic Performance	4
Training assessment and processes	9
Support Students' Competences in Inquiry-Based Education	7
Evaluation practices and learning decisions	5
Feasibility and collaboration	4
Online Learning	8
Total	50

Table 1.10 Data regarding the results

The table 1.10 shows the results and findings of the research articles at secondary and higher levels from Pakistan and different countries. It has been found that formative assessment results in improved students' learning (4), quality of teaching learning (2), Interpersonal-Interpretive Performance (7) Academic Performance (4) Training assessment and processes (9), Support students' competences in inquiry-based education (7) Evaluation practices (5) collaboration (4) and supports online learning (8).

Discussion

This study focused on previous researches done in particular time period from 2015 to 2020. It aimed to provide a comprehensive indication of formative assessment researches published from 2015 to 2020 through content analysis to identify trends and patterns. The data were analyzed under 10 sub-categories i.e study type, study years, sampling, study locations, tools used, research methods, data analysis procedure, variables and results. In majority of the studies quantitative methods were used as compared to the qualitative and mixed research.

In terms of the locations of the studies on formative assessment, this content analysis identified 50 studies from 28 countries, which are Pakistan, Malaysia, Turkey, Portugal, South Africa,

Australia, USA, Iran, Netherland, Ukraine, Singapore, Indonesia, and Thailand, respectively. As for as the data collection tools is concerned, it was found that in most of the studies quantitative data collection tools were used like as compare to qualitative data collection tools i.e questionnaire (N=34), Interview (N=9), and observation (N=7) to collect data. As it can be seen in Table 5, researchers mostly conducted their studies at higher education level (N=30) followed by secondary level (N=20). However, it has been found that studies related to practicing formatting assessment at primary level from 2015-2020 is not on the record. In majority studies sample size was less than 50 participants (N= 41). So far, the researchers did not carry out mostly studies with larger sample size that is above 100 (N= 6). The greater part of the studies (N=43) used quantitative data analysis, where mean and standard deviation (N=20) were the most common descriptive analysis procedures. About inferential analysis, the use of t-test (N=08) appeared to be most common procedure.

The results of the reported studies are divided into different sections. First, researcher analyses the results related to formative and summative testing and discuss the findings. Next, carefully check the opinion of the students, and finally researchers conduct some analysis based on the learning analysis tool. Participant's qualitative responses covered a wide range of aspects, and the researchers highlighted the most important themes emerged in these responses. These themes are: participation, excitement and fun, saving learning time, breaking convention, and alleviating the lack of in school infrastructure. A summary of student responses to types of online formative quizzes shows that most students think that various types of formative assessment are easy to try. More specifically, students think those multiple choice questions and true /false assignments are easy to attempt.

The research also explored the changes the teachers have made regarding formative assessment in classroom practice. The studies first introduce an analysis of the formative classroom practice of teachers who implemented the least and the most new activities. It then provides information about practices related to the entire group of teachers.

The results of the study shows that teachers with higher Continuous Professional Development (CPD) participation have stronger beliefs in formative assessment than with lower Continuous Professional Development (CPD) participation. The results of this study are worth noting for understanding teachers' perceptions of factors that influence adoption or adaptation of formative assessment. The factors considered in these studies are very useful for school administrators to deal with teachers' challenges in formative assessment, which will help minimize the barriers to effective implementation of formative assessment. The results show that feedback is considered more useful under formative assessment conditions, self-efficacy is greater, and interest tends to increase. These findings are in accordance with Martinez and Martinez (1992), who came to conclusion that formative assessment improves students' achievement. Bennet (2011), also concluded that formative assessment had distinctive advantages for learning. To him, poorly designed formative assessment may give inaccurate feedback.

Conclusion

It is important to use formative assessment consistently and carefully to improve students' learning. Formative assessment and formative assessment practices must be established to ensure that all pupils obtain the greatest benefit. It can be concluded that research on formative assessment has been increasing as technology is integrated into education. The purpose of this study was to conduct content analysis of 50 studies in Pakistan and abroad from 2015 to 2020 to determine trends in this research field. Based on the research results, the findings about the research year, research type, research location, research methods and sampling, tools used, data analysis procedures and variables were discussed. It can be expected that these findings will contribute to research in the field of formative assessment, with a view to bring improvement in the future.

Recommendations

- 1- Keeping in view the conclusions of the study, it is recommended that training be provided to the teachers in connection with formative assessment. So that they can employ this very important type of assessment successfully to get maximum for the improvement of teaching and learning.
- 2- It is also recommended that challenges teachers face during formative assessment be addressed by the administrators.

- 3- As the feedback received from formative assessment contribute in the improvement of both teaching and learning, so it is recommended that the teachers may have proper record of the feedback and the remedial actions taken on the basis of that feedback.

References

- Black, P., & William. D.(2009). Assessment and classroom learning, *Assessment in Education*, i5, i7-74.
- Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi delta kappan*, 92(1), 81-90.
- Black, Paul & Dylan (1998). "Assessment and Classroom Learning". *Assessment in Education: Principles, Policy & Practice*. 5 (1): 7–74.
- Black, Paul & Dylan (2003). "In praise of educational research': formative assessment" (PDF). *British Educational Research Journal*. 29 (5): 623–637.
- Bloom, B.iS. (1971). Learning for mastery. *Handbook on formative and summative evaluation of student learning*. Edited by B.S. Bloom, J.T. Hastings, and G.F Madaus,43–57.iNewYork:McGraw-Hill
- Brazeal, Kathleen, R. & Brian, A. C. (2017). "Student buy-in toward formative assessments: the influence of student factors and importance for course success." *Journal of microbiology & biology education*
- Cauley, K, M.; McMillan, J. H. (2010). "Formative Assessment Techniques". *The Clearing House*.
- Cronbach, L. J. (1963). Course improvement through evaluation. *Teachers college record*, 64(8), 1-13.
- Crooks, T. (2001). "*The Validity of Formative Assessments*". British Educational Research Association Annual Conference, University of Leeds, September 13–15, 2001.
- Din, M. N. U., Faizi, W. U. N., & Khan, A. M. (2018). Impact of Formative Assessment and Feedback on Higher Education. *Global Social Sciences Review*, 3(4)
- Elmahdi, I., Al-Hattami, A. and Fawzi, H.. (2018). Using Technology for Formative Assessment to Improve Students' Learning. *Turkish Online Journal of Educational Technology-TOJET*, 17(2), pp.182-188.
- Fook, Chan Yuen (2013) "Promoting transformative learning through formative assessment in higher education." *Asian Journal of Teaching and Learning in Higher Education (AJTLHE)*
- Heick, (2008). Formative Assessment for Literacy, Grades K-6: *Building Reading and Academic Language Skills Across the Curriculum*. Thousand Oaks, CA: Corwin Press.
- Huhta & Ari (2010). "Diagnostic and Formative Assessment". In Spolsky, Bernard; Hult, Francis M.(eds.).*The Handbook of Educational Linguistics*. Oxford, UK: Blackwell. pp. 469– 482
- Hussain, S., Shaheen, N., Ahmad, N., & Islam, S. U. (2019). Teachers' classroom assessment practices: challenges and opportunities to classroom teachers' in Pakistan. *Dialogue*, 14(1), 88.
- Kulasegaram, Kulamakan, Patangi, K. & Rangachari, (2018). "Beyond "formative": assessments to enrich student learning." *Advances in physiology education*
- Laight, J., Asghar, M., & Aslett-Bentley, A. (2010). Investigating conceptions and practice of formative assessment in higher education. *Literacy information and computer education journal*, 1(3), 192-199.
- Little, J. L. (2018). The role of multiple-choice tests in increasing access to difficult-to-retrieve information. *Journal of Cognitive Psychology*, 30(5-6), 520-531.
- Morze, N., Vember, V., & Varchenko-Trotsenko, L. (2017). Formative and peer assessment in higher education.
- Ogange, Betty, John Agak, Kevin Okelo, and Peter Kiprotich (2018) Student perceptions of the effectiveness of formative assessment in an online learning environment. *Open Praxis* 10, no. 29-39.
- Reddy, L. A., Dudek, C. M., & Lekwa, A. (2017). Classroom strategies coaching model: Integration of formative assessment and instructional coaching. *Theory Into Practice*, 56(1), 46-55.
- Scriven, M. (1967). The Methodology of Evaluation. In Tyler, RW, Gagne, RM, Scriven, M.(ed.): Perspectives of Curriculum Evaluation. '^eds.'): *Book The Methodology of Evaluation*. In. Tyler, Rw, Gagne, Rm, Scriven, M.(Ed.): *Perspectives of Curriculum Evaluation*, Rand McNally, Chicago.
- Shepard, L. A. (2017). Formative assessment: Caveat emptor. In *The future of assessment* (pp. 279-303). Routledge.
- Van der Nest, A., Long, C., & Engelbrecht, J. (2018). The impact of formative assessment activities on the development of teacher agency in mathematics teachers. *South African Journal of Education*. 38(1)