

Assessing the Effect of Agree/Disagree Circles, Exit Ticket, and Think – Pair – Share on Students’ Academic Achievement at Undergraduate Level

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Abstract

The study was designed to determine the effect of assessment methods on students’ academic achievement in the course of Curriculum Development at undergraduate level in the University of the Punjab. Pre-test post-test quasi experimental design was used for the present study. The sample of the study consisted of 87 students who were present in two groups, later named as control group and experimental group. Intact groups were chosen for the study although treatment was randomly given to the groups. Experimental group was exposed to treatment while control group was assessed through conventional method. Data were collected through worksheets, class tests, pre-test and post-test. The tests were developed in the light of basic rules/principles of test construction and Bloom’s Taxonomy of Educational Objectives. Collected data were analyzed by using various statistical techniques such as independent samples t-test, dependent samples t-test and one way ANOVA. Results revealed that students who were exposed to the treatment achieved higher scores than those students who did not receive the treatment. The findings suggest that assessment methods used in this study significantly enhance the achievement of the students. All three assessment methods equally enhance students’ achievement. Think-Pair-Share was found the most effective and efficient method of assessment as compared to Agree/Disagree Circles and Exit Ticket. The findings of the study may be helpful for the students in a way to improve their learning as well as for the teachers to carry out effective instruction in the classroom. The study opens doors for innovations and intervention in the classrooms to use different assessment methods.

Keywords: Agree/Disagree Circles, Exit Ticket, Think – Pair – Share, Methods of Assessment, Undergraduate students, Academic Achievement

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Introduction

Assessment measures the depth and breadth of learning in the process of teaching and learning. The main aim of assessment is to explore the capabilities of an individual and to identify what they know. In an educational context this is normally in the form of grades or marks that builds the achievement record of an individual. Identifying what an individual knows and can do is the heart of all kinds of assessment (Sambell, McDowell & Mantgomery, 2013). Assessment inspires, motivates and provides the necessary feedback to help learners for their prompt creativeness in learning. It can also help us to diagnose the areas of learning that cannot be measured easily. Assessment serves different purposes in educational setting as it can be used to grade the achievement of students, help them to select the future courses or jobs, provide long-term goals to students, and to provide sufficient evidences on the effectiveness of courses or teachers. But this is mainly suitable for the summative or final assessment of a course that sums up the students' achievement (Wright, 2015).

Formative or ongoing assessment is the main use of assessment for the teachers in teaching learning process (Brown, 2006). Formative assessment is mainly used throughout the teaching-learning process or the particular course to identify the difficulties in the learning process so that proper action can be taken; and to make suitable decision accordingly that either the learning process is successful or not and to what extent that learning process is successful. Diagnostic and initial assessments have similar formative roles in teaching-learning process (Smith, 2006). Assessment is the continuous process of improving individual performance of students. The need for reform in instruction and assessment is a constant issue in education as we continue to attempt to better prepare our students for the future. More and more we are encouraged to find ways to make students conceptually understand what they are learning, rather than rote learning or learning without meaning. We are told that students need to learn that how they become problem solvers by investigating, formulating, reflecting, listening, exploring, justifying, clarifying, modeling, and applying. Not only through instruction can educators assist students in attaining these goals, but with the proper use of assessment (Chin & Osborne, 2008).

To assess the quality of assessment, there are basically two keys. The first key deals with the ability to know about the assessment results and how to use them. It can be used to check either learning has occurred or not (assessment of learning) and other times it can be used to promote learning in teaching-learning process (assessment for learning). The second key is to ensure that the assessment that is selected must be designed in a way that reflect the achievement and learning targets that support the standards: mastery of content, the tactics to use that content or knowledge (reasoning), demonstration of

performance skills and capabilities of product development (Harris & Brown, 2009). Now a latest trend is emerging in the field of assessment that we may consider as the third key which deals with the ability to design assessments that either they are covering the learning targets for which they are set or not and serve the required purposes within the classroom context.

While exploring the assessment and its application in the classroom setting, teachers want to know “what works” in education, but the truth is nothing works everywhere and everything works somewhere. Therefore, a research can never tell about the classrooms’ situation to the teachers. It all depends on the context of the particular classroom and varies in different situations; what course of action is effective in one situation may be harmful in another. However, research can explore for teachers that what areas are likely to be worth exploring and what areas are to be dead ends. That is why, classroom assessments appear to be more promising (Timperely, 2008). In different contexts, focus is not only on the exploration of what the instructional methods or content and knowledge is given to students but also on what the students are learning from it has increased both the students’ achievement and engagement. Many teachers found different aspects of formative assessments more effective for their students, their way of teaching and the context in which they work. Therefore, teachers must decide what kind of assessment should they adopt and how they will practice that selected assessment in teaching-learning situation. As always, of course, more research is needed in the field of assessment but the findings of the available researches recommends that if teachers chose the best methods among many and develop their practice focused on some principles, they are unlikely to fail because of the neglect of delicate features or subtle (William, 2013). The major part of classifying assessment is to assess the content and knowledge clearly what are to be taught to the students in the classroom. The heart of accuracy in classroom assessment lies in assessing the students from different assessment methods to catch their attention. Researchers explored many assessment methods to measure the learning of the students. The present study also used different assessment methods to assess the achievement of undergraduate students and the methods used in this study were: Agree/Disagree Circles, Exit Ticket, and Think – Pair – Share.

Agree/Disagree Circles is the assessment method that is used for variety of purposes in classroom, support students in their work, rank performances, certifying proficiency and evaluating teaching and learning. It can also be used to activate thinking and to force students to defend it. This may be used before instruction to identify misconceptions or at the time when students are developing new conceptual ideas to clarify their thinking skills (Keelay, 2008). With the help of this method, previous knowledge of the students may be assessed and it may strengthen their argumentative power when they are required to justify their thinking to their fellows about why they

agree or disagree with the statements. Through academic argumentation in academic environment, they may modify their ideas and adjust these according to the new information which they get after listening the arguments of their peers. This method can be used before introducing any concept to the students or during the instruction when students are at concept development stage and need reinforcement (Keelay, 2008; Keelay & Tobey, 2011). It also helps the students about misconceptions they had about any theory, concept or principle (Saris, Revilla, Krosnick & Shaefer, 2010). Many teachers use it already in their classes by using opinion polls when they ask the students about a concept and require them to agree or disagree on it. Through this method, a teacher can easily diagnose the prior learning level of the students and decide where and how to start teaching while considering the problems that come up with students' responses. It also figures out where potential conflicts and divisions may arise during the lecture. It is also helpful for the students to learn about their own experiences/opinions and to compare their opinions with that of their class fellows by considering the evidences and expert opinions.

Exit Ticket is the assessment method used at the end of the instruction and may be helpful in summarizing the concepts and ideas at once. It collects information about different concepts and use when planning for the next lesson. In Exit Ticket, the practice of jotting down key ideas stimulates the development of tinkerers but on piece of paper or slip, students tinker with ideas which results in questioning of their text or of each other. But Buehl (2003) explored that exit slips are not just jotting down of ideas but they can help the students to organize the concepts, synthesize ideas and comprehend the experiences. Exit slips have different purposes with students of different age group and its use vary from teacher to teacher and from subject to subject. It provides firsthand information about what students have understood from the lesson and either the objective has been achieved or not. Exit slips can be helpful for the teachers to plan their lesson. Wormeli (2001) found that Exit slips provide immediate feedback and diagnose the areas of improvement that can be helpful for teachers to guide about planning and presentation of the lesson.

Think – Pair – Share is the assessment method used at any time during the lecture to activate thinking, process new ideas, or reflect on learning. This strategy can increase success rate as well as willingness to participate in the classroom discussion (Rifa'I & Lestari, 2018). This method accelerates the thinking ability of the students. Each student is required to think answer of the question either individually or in pair. Students are given time to write down their answer on paper and once they have written down their answers they are required to pair up with their class fellow and share their answers with them. When they discussed their answers with each other in pair they are asked to share their answers with the rest of the students or with the whole class. Teacher may circulate through class during the assessment, as students are discussing in pairs, to check the

understanding of the students and their comprehension ability of the content matter. They may recognize the conceptual misunderstandings of the students and guide them. Think – Pair – Share also helps to put the students at the center of their learning and help the teachers to guide them about the success criteria and learning intention (Dyer, 2012). The effectiveness of Think – Pair – Share depends on the way this method is being done in the classroom. When it is done in its true sense, it gives true reflection of knowledge sharing among group and individuals.

In the past, at national and international level many assessment methods were introduced. Black, Harrison, Marshall and Wiliam, (2003) conducted a research on assessment methods and investigated that assessment methods help the students to recognize their mistakes and improve their learning by finding solutions. They also mentioned that assessment not only includes traditional paper pencil test but also includes standardized testing, technological innovations and social diversity. Beach (2006) worked on assessment for learning and explored in their study that the purpose of assessment is to judge achievement and improve learning. Angelo and Cross (2011) give the characteristics of classroom assessment. They proposed that classroom assessment is learner-centered which focus on improving and observing learning, teacher directed in which teachers have the authority to decide what are the procedures according to which students are going to be assessed, what type of contents are assessed and how to response the information that is received from assessment. Enerson, Plank and Johnson (2010) introduced many assessment activities and let people know how to use them in classroom setting. That information might be helpful for the teachers as well as students to improve their learning. Nilson (2010) also conducted the research on the assessment techniques and his work investigated that classroom assessment is teacher-oriented process but it also required student participation equally for effective learning.

To monitor the learning from different aspects, enhance the academic achievement of students and to improve teaching learning process are the main purposes that deals with assessment (Corcoran, Dershimer & Tichenor, 2004; Stiggins & Chappuis, 2005). In electronic environment and in modern age of technology, the essential and most effective part of teaching-learning is to use the effective assessment methods because educational institutions are always held accountable for students' academic achievement and assessment represents such kind of accountability (Association of American Colleges and Universities, 2004; Elliott, 2003). This does not mean that only assessment that is conducted for accountability leads the system towards development in form of learning improvement of their students. But it also includes the criteria being measured, purposes of assessment and intended learning outcomes to be achieved before conducting any assessment (Gaytan, 2002).

Previous researches (e.g. Beach, 2006; Bitchener, 2008; Elliott, 2003) conducted on assessment methods in educational settings have discussed the application of assessment methods in classrooms; they do not investigate the effect of different assessment methods on students' academic achievement in university classroom setting. This study focused on this important aspect whether the assessment methods have any positive or negative effect on students' academic achievement or not? This experimental research also explored the best assessment method that has effect on students' academic achievement.

Objectives of the Study

The main objectives of the study were to:

1. Investigate the effect of Agree/Disagree Circles, Think – Pair – Share and Exit Ticket on students' academic achievement at undergraduate level.
2. Compare the students' achievement of experimental and control groups with and without using methods of assessment.
3. Identify the best method of assessment from Agree/Disagree Circles, Think – Pair – Share and Exit Ticket in regard to promoting students' academic achievement

Hypotheses

To achieve the objectives of the study, following null hypotheses were framed and tested.

- H₀₁: There is no significant effect of Agree/Disagree Circles, Think – Pair – Share and Exit Ticket on students' academic achievement at undergraduate level.
- H₀₂: There is no significant difference in students' achievement of experimental and control groups with and without using methods of assessment.
- H₀₃: There is no significant difference in methods of assessment (Agree/Disagree Circles, Think – Pair – Share and Exit Ticket) used to promote students' achievement.

Methodology

This experimental study was designed to explore the effects of methods of assessment on students' academic achievement in university classroom. Pre-test and post-test in form of a quasi experimental design were used for this study. Pre-test of both the groups were taken. After taking pre-test, treatment was randomly assigned to the groups by using fishbowl sampling and then both groups were post-tested.

Sample

The sample of the study consisted of two sections of 5th semester of Bachelor of Science Education with a total of 87 students. Two groups were chosen for the study and these groups were assigned to experimental and control groups by using fishbowl sampling method.

The sampling framework for the present study is as below:

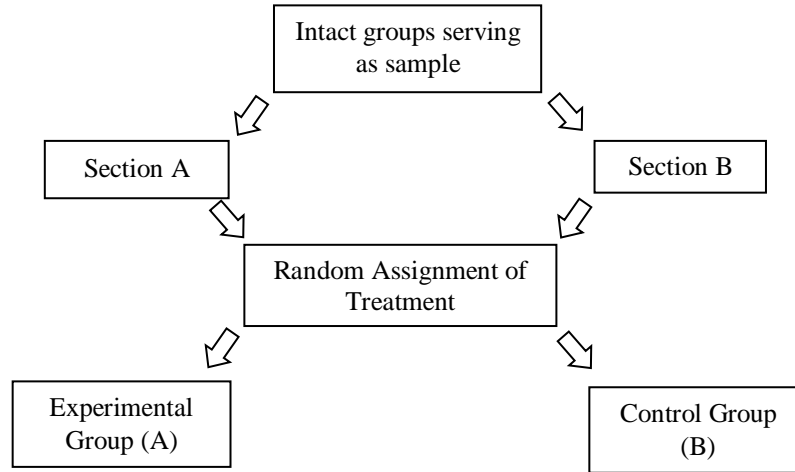


Figure 1. *Sampling Frame of the Study*

The sampling framework of the study shows that treatment was randomly assigned to both the groups, but the sample was not selected randomly, intact groups were taken.

Instrumentation

Lesson plans, worksheets and achievement test (pre-test and post-test) were the sources of data collection of the study. The lesson plans for this study were prepared by considering learning objectives and targets of assessment. The assessment methods used for teaching were chosen according to the nature of the content. The researchers prepared 46 lesson plans for 16 weeks that covered the complete content of the course (Curriculum Development). The lesson plans were formulated by matching the learning objective to that of the selected assessment methods.

Another instrument used for this study was achievement test that served the purpose of pretest and posttest. All the objectives were enlisted and assessed through the test. A two-way table of specification was constructed by keeping in view the Bloom's Taxonomy of Educational Objectives. Since the achievement test was developed at undergraduate level, therefore the test comprised of items of all the cognitive levels of Bloom's taxonomy i.e. knowledge, comprehension, application, analysis, synthesis, and evaluation. While constructing test whole syllabus was covered and students learning outcomes (SLOs) were assessed through various item formats e.g. MCQs and short answers.

The instruments were validated by five assessment and curriculum experts and then reviewed according to the suggestions given by them. After finalization of test reliability was checked after administering test on 200 students by using Chronbach's alpha that was 0.844. The test was also analyzed by using ConQuest software for calculating item discrimination and item difficulty. Succeeding measures to select the items were:

Difficulty index = 0.2 – 0.8

Discrimination Range = 0.2 – 0.6 (Ebel & Frisbie, 1991; State Board of Education, 2014)

After finalizing the instruments, data was collected from the 5th semester of B.S.Ed. students. The experiment continued for the full semester i.e. 16 weeks. The process of data collection for this research study was started from the very first day of the experiment. Methods of assessment were applied to them and observe their achievement after every assessment method daily or weekly accordingly. The collected data were analyzed by using Independent sample t-test and dependent sample t-test. Data were collected by pretest and posttest to measure the achievement of the students at the start and end of the experiment.

Data Collection Procedure

Before starting the experiment, pre-test was taken from both the groups to check their baseline either they are on same level or not before conducting the experiment. There was a little difference (0.591) in the mean score of both the groups i.e. experimental and control group. Both the groups were taught by the researcher; course contents and learning materials were same for both the groups. Although, both groups were assessed differently side by side i.e. control group was assessed by traditional assessment method and experimental group was assessed by Agree/disagree circles, think-pair-share and exit ticket. The process of implementation of these methods is given below.

Table 1

Application of Methods of Assessment

Methods	When to use	How to implement
Agree/Disagree Circles (as diagnostic assessment method)	Before instruction - to identify misconceptions. It may be applied when students are developing new conceptual ideas to clarify their thinking.	Create a set of agree/disagree statements related to a topic. Have students stand in one larger circle. Pose the first agree/disagree question. Students who agree move to the inside of the circle, while students who disagree stay on the outside. The inner circle faces the outer circle so that students with different opinions are facing each other.

Think – Pair – Share (as formative assessment method)	Mid/end of the lecture	The teacher poses a question. Students think or write individually about the question and then pair up with a partner to discuss their ideas. Pairs can share their ideas with another pair or during whole class discussion. Think – students think about a question or prompt silently. Sometimes students also write their thoughts. Pair – students discuss their ideas with a partner. Share – partners share their ideas in small groups or whole group
Exit Ticket (as summative assessment method)	At the end of the class or period to collect information to plan for the next lesson.	In the last few minutes of class, pose a question that each student answers individually. Students must turn in their answers in order to leave the room or transition to the next subject. Exit Tickets can pose a variety of questions, including other formative assessment strategies.

Table 1 explains the way Agree/Disagree Circles, Exit Ticket, and Think – Pair – Share were applied. It shows that Agree-Disagree Circle is mostly used at the start of instruction to know how far students have prior knowledge about the lesson to be discussed by the teacher. Think-Pair-Share is either applied during the instruction for the purpose of formative assessment or at the end for summative assessment purpose. Exit Ticket, as the name shows, is applied at the end of instruction to get feedback from students about their learning and to plan for next instructional plan.

Table 2

Comparison between Pretest and Posttest scores of Experimental Group

Scores	N	Mean	SD	df	t-value	Sig. (2-tailed)
Pre-Test	36	6.39	3.59	35	22.298	.000
Post-Test	36	22.81	3.16			

Table 2 indicates the pretest and posttest scores of experimental group. Dependent sample t-test was applied comparing the mean achievement scores of experimental group in pretest and posttest (Pretest Mean= 6.39, SD= 3.588; Posttest Mean= 22.81, SD= 3.161) using an alpha level of significance .05. The values of pretest and posttest were significantly different. The calculated t-value (22.298) at df=35 was greater than the critical / table value (1.684) on 0.05 level of significance. Similarly, the value of p was $0.000 < 0.05$ which indicated that the students of experimental group showed significantly better achievement in posttest than pretest.

Table 3

Comparison between Experimental Group & Control Group Based on Pretest Scores

Groups	N	Mean	SD	df	t-value	Sig. (2-tailed)
Experimental Group	36	6.39	3.59	85	2.790	.06
Control Group	51	6.98	3.63			

Table indicates the achievement scores of experimental group and control group in the pretest. Independent sample t-test was applied comparing the mean achievement scores of groups in pretest (Experimental Mean= 6.39, SD= 3.59; Control Mean= 6.98, SD= 3.63) using an alpha level of significance .05. The values of experimental and control group were not significantly different. The calculated t-value (2.790) at df=85 was greater than the critical / table value (1.290) on 0.05 level of significance. Similarly, the value of p was 0.06>0.05 which indicates that no significant difference exists between control and experimental groups.

Table 4

Comparison between Experimental Group & Control Group Based on Posttest Scores

Groups	N	Mean	SD	df	t-value	Sig. (2-tailed)
Experimental Group	36	22.81	3.16	85	7.416	.000
Control Group	51	16.92	3.95			

Table 4 indicates the comparison of achievement scores of experimental group and control group in the posttest. Independent sample t-test was applied to compare the mean achievement scores of groups in pretest (Experimental Mean= 22.81, SD= 3.16; Control Mean= 16.92, SD= 3.95) using an alpha level of significance .05. The values of experimental and control group were significantly different in posttest. The calculated t-value (7.416) at df=85 was greater than the critical / table value (1.290) on 0.05 level of significance. Similarly, the value of p was 0.000< 0.05 which indicate that the students of experimental group showed better performance in posttest than control group while the performance of experimental group in pretest was not better than the performance of control group.

Table 5

Multiple Comparison between Methods of Assessment by Using ANOVA (n=36)

MA (I)	MA (J)	Mean Diff.	Sig. (2-tailed)
Agree Disagree Circles	Think-Pair-Share	-1.330*	.000
	Exit Ticket	.625*	.000
Think-Pair-Share	Agree Disagree Circles	1.330*	.000
	Exit Ticket	1.956*	.000
Exit Ticket	Agree Disagree Circles	-.625*	.000
	Think-Pair-Share	-1.956*	.000

Table 5 illustrates the significant difference among methods of assessment used to assess the experimental group students at university level by multiple comparisons. Tukey post - hoc test was applied to determine that which Method of Assessment differed from each other. Agree Disagree circle is significantly different from other Methods of assessment at 0.05 level of significance. The mean difference of Agree Disagree circle compared to Think-Pair-Share (Mean Difference = -1.330*; p = .000) and Exit Ticket (Mean Difference = .625*; p = .000) shows that this method is significantly different with other methods of assessment used. Likewise, Think-Pair-Share is significantly different from other methods of assessment at 0.05 level of significance. Its mean difference compared to Agree Disagree circle (Mean Difference = 1.330*; p = .000), and Exit Ticket (Mean Difference = 1.956*; p = .000) shows that this method is also significantly different with other methods of assessment used. Lastly, Exit Ticket is also significantly different from Agree Disagree circle (Mean Difference = -.625*; p = .000) and Think-Pair-Share (Mean Difference = -1.956*; p = .000) at 0.05 level of significance. The mean difference of values also showed that Think – Pair – Share is the best method of assessment than agree/disagree circles and exit ticket in improving students' achievement.

Results and Discussion

The results of the study showed that the experimental group showed better performance than control group. The experiment revealed that assessment methods used in this study had positive effect on students' academic achievement. The better performance of the group taught through different methods of assessment showed that the assessment methods used in the study does affect students' achievement. This concept is also discussed by Abejehu (2016) that assessment affects students' performance in positive ways. Nxumalo (2007) also explored that assessment methods play effective role in improving the performance of the students and an effective mean to inform educators as well as learners about their learning progress that would ultimately benefits the students in improving their progress as well as improving learning process. Another researcher Baker (2010) explored that assessment methods as alternative assessment methods, that are initially used in education in 1991 are the methods that play role in improving the performance of the students continually.

The results of the study found that assessment methods improve the results of the students. The better performance of the experimental group showed that students found assessment methods better as compared to lecture method. This finding closely relates with the findings of Frederickson (1992) who explored that assessment methods are an important mean of improving students' performance. Students get insight about their betterment and misconceptions of content what are taught to them. The findings of the present study also correlate with a study conducted by James and Folorunso (2012) in

Nigeria in which they emphasized that assessment methods had significant effect on students' learning and improves the performance of the students in the subject of mathematics. The results of the study also aligned with the research results conducted by Gibbs and Simpson (2004, 2005), who drew a wide range of researches on how assessment techniques helpful in increasing students' achievement. Results of the study also support the findings of Nicol and MacFarlane (2004). They explored that a large range of classroom assessment methods help instructors to design instruction, feedback receive from students can be used to revise their teaching strategies for improving learning. Assessment and its implication with teaching and learning are the important element for classroom practices. Many researchers (Louden, 2005; Matters, 2006) also express their view about the teacher knowledge regarding the assessment and suggests that teachers must have knowledge about assessment.

The findings of the study explored that Agree/Disagree circles provide a kinesthetic way to activate thinking that is why students' academic achievement was improved. This finding supports the findings of Keeley and Tobey (2011) who explored the agree/disagree circles stimulate and initiate thinking process of the students and as a result their learning improved. Revilla et al., (2009) also explored that A/D (agree/disagree) circles increases the quality of learning among students the students listen to statements made by the teacher and decide whether they agree or disagree. The findings of the current study also explored that exit tickets also effect the performance of the university students in positive way, this finding supports the findings of Mastromonaco (2015) who chose ETs (Exit Tickets) to examine the effectiveness of assessment at the end of each class. He used exit tickets as a pedagogical strategy and explored that it increases the behavioral engagement as well as academic performance of the students. some other researches also justify the findings of the present study i.e. exit slips can emphasize the process of learning, document learning and evaluation of the effectiveness of learning (Bafile, 2004; Fisher & Frey, 2004). Another assessment method, Think-pair-share, is also very useful for both students and teachers because it can be used to progress the learning and teaching process in the valuable form of formative assessment (Cooper & Robinson, 2000). The results of the study explored that think-pair-share increases the performance and understanding of the students and the findings of Heward (1994) also justify that think-pair-strategy is a good way to incorporate cooperative learning into a classroom develop a meaningful understanding of class material. The findings of this research study also revealed that methods of assessment used in this study are significantly different from each other. From all methods of assessment that were used in this study, Think-Pair-Share is the best method of assessment that improves the students' achievement in the university classroom. Students showed significantly better performance against this method as compared to all other assessment methods of assessment.

Recommendations

In the light of results, it is recommended to conduct more researches to find out the effect of assessment methods on academic achievement of students across different levels and in different subjects. As the results of the research shown that assessment methods used in this study positively affect the academic achievement of students, therefore, curriculum planners and policy makers may indulge these methods of assessment in curriculum to improve the achievement of students. There is a dire need to shift paradigm from traditional assessment method and to encourage teachers to use different assessment methods in their classrooms.

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