Teachers focus to practice formative assessment techniques: Assessment of class practices of prospective teachers

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Abstract

The key objective of the study was to find out the formative assessment techniques used by teachers of a public sector university of Lahore city. To achieve this objective a B.Ed. (Hons) class comprising 40 prospective teachers and five teachers involved in teaching were purposively selected. Data was collected by developing two instruments: An observation schedule and a questionnaire. To ensure the reliability of observation, inter observer agreement was followed and reliability coefficient of questionnaire was identified as 0.839. Six observations of each teacher were calculated. Data was analyzed by using SPSS software. Findings of study showed that teachers usually ask questions and give examples in classroom and the other techniques to assess students' learning are generally ignored. Teachers assess lower cognitive abilities of students in the classroom. The study suggests that teachers need training for the use of assessment techniques in their classes.

Keywords: Formative Assessment Techniques, Blooms Taxonomy, Prospective Teachers.

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Introduction

Assessment needs a significant portion of a teacher's professional time and energy. The primary purpose of assessment is to support and improve student learning (Phye, 1997). Formative assessment is continuing assessment, reviews and observations in classrooms. Teachers use formative assessment to improve instructional methods and provide students feedback throughout the teaching and learning procedure (Fisher & Fery, 2007). It is only the consistent use of formative assessment (also known as assessment for learning) that has revealed promise in refining student learning and achievement (Black & Wiliam, 2006; Earl & Katz, 2006).

Previous researches reveal that specific formative assessment practices have a direct influence on student's learning and achievement. Particularly four large reviews on the impact of formative assessment (Black & Wiliam, 1998; Crooks, 1988; Kluger & DeNisi, 1996) have argued that the usage of formative strategies such as questioning techniques, feedback without grades, self-assessment, peer assessment and formative use of summative assessments can double the speed of student learning (Wiliam, 2007). Taras (2001, 2002, 2003) has carried out a number of studies on student self-assessment in higher education which have shown positive benefits. Formative assessment helps the low achievers to get good scores (Black, Harrison, Lee, Marshall, & Wiliam, 2004; Black & Wiliam, 1998). Formative assessment involves collecting, interpreting, and acting on information about student's learning so that it may be improved (Bell & Cowie, 2001). Angel and Cross (2003) said that the classroom assessment is a style designed to help teachers to find out what students are learning in the classroom and how well they are learning it. Features of Classroom Assessment includes: a) emphasis on observing and improving learning, rather than observing and improving teaching; b) individual teacher's decision on what to assess; c) how to assess, and how to respond to the information gained through the assessment, its purpose is to improve the quality of student learning, not to provide evidence for evaluating or grading students; it provides information on what, how much, and how well students are learning, the assessment technique is chosen to fit the subject matter and the needs of the particular class , it is an ongoing process, i.e. the creation and maintenance of a classroom "feedback loop"; as this approach becomes integrated into everyday classroom activities, the communications loop between faculty (teaching) and students (learning) becomes more efficient and effective; it provides early feedback before students are evaluated for grades so that necessary adjustments can be made (Angel & Cross, 2003).

The purpose of education is to change students' behavior. The most important aspects of this change are amount, kind and level of the cognitive, affective and psychomotor skills developed among students. These aspects of changes are determined by assessment (Stiggins, 2002). Assessment is a challenging task and active classroom assessment requires knowledge of the approaches of assessments and mastery over assessment approaches. Therefore, teachers need to be educated and skillful in the application of classroom assessment. Teacher education programmes do not require prospective teachers to take up courses in assessment of students' learning; these courses provide training for the assessment of students' achievement most of the time and in-service teachers reported that they were not well prepared to assess students' learning. As consequence, teachers neither have knowledge of classroom assessment nor of large-scale testing (Black et al, 2004). It is estimated that teachers spend up to 50% of their instructional time in assessment related activities (Stiggins, 1991). For an activity that commands such a high proportion of their professional practice, teacher receives little or no formal assessment teaching in the preparatory program. Teachers have been encouraged to review their practice to enhance children's learning (Black, Harrison, Lee, Marshall, & Wiliam, 2002) by concentrating 'less on teaching and more on learning in the classroom (Black, Harrison, Lee, Marshall, & Wiliam, 2003). Research studies on classroom assessment have mainly focused on assessment and grading and not assessment and learning (McMillan, Myran & Workman, 2002; Morgan & Watson, 2002). The present study investigated the formative assessment techniques that teachers are using in their classes to assess the performance of their students at public sector university of Lahore city in the newly introduced four years B.Ed. (Hons) under Higher Education Commission reforms in the field of teacher education in Pakistan. And through the use of these formative assessment techniques which domains of Blooms Taxonomy (cognitive and effective) are usually assessed by teachers. The study may be significant for

the faculty members of universities to review their current classroom assessment practices in order to make the classroom teaching effective. The study will help them for their professional development which in turns may enhance the quality of graduates. The findings of study will be useful for academia of developing countries that have same backgrounds.

Research Methodology

This study was quantitative in nature followed the survey method. It was carried out over a period of one month. The pilot study on two teachers and their students in another class of B.Ed. (Hons) in the same university was conducted b he first author of the study. Researcher take the opinion of students before the start of the study; an orientation was given to the students regarding the purpose of questionnaire and consent of students who were willing to participate in the study was taken.

Sampling

There were three sessions of B.Ed (Hons) at that university. One class of B.Ed (Hons) first semester was selected on the basis of availability of class during the period of research. Seven teachers were teaching different subjects (compulsory and optional) to B.Ed (Hons) class of first semester. Five teachers (teaching compulsory subjects) were selected by using purposive sampling technique for making observation of class teachers in context assessment techniques used in the class. Six classes of each teacher were observed. To invite the students' view, all the student teacher of the observed class was considered as population of this study. 40 students out of 52 were willing to participate in the study and it was considered the sample of the study.

Instrumentation

For data collection two tools were used: a) observation schedule and b) questionnaire. Preset coding schedule was used for observation of formative assessment techniques. "Preset coding schedules are usually based either on time or on event. Event coding requires the identification of a particular event or events and the recording of them to allow a measure of frequency, both absolutely (number of occurrences) and relatively (frequency of different events). In addition, design allowed the observers to record the sequencing of such events" (Robson, 2002). Control is most explicitly exercised through time coding of various types (Scott & Usher, 2011). An observation sheet was prepared by researcher with time coding, list of different classroom assessment techniques included in this sheet and space was given for description of cognitive ability to be assessed with formative techniques. Various devices to measure the reliability of such instruments have been developed. There were two main approaches: first was intra-observer consistency and second was inter-observer agreement, in which the extent of concurrence between two observations by different researchers was, measured… these devices measure the reliability (Scott & Usher, 2011).

To ensure the reliability of class observation inter-observer agreement was applied. Two observers one was researcher and the other was trained person made the observation. To ensure the validity of observation sheet content related evidence of validity was applied. This type of validity determines "Instrument contains an adequate sample of domain of content it was supposed to represent… someone who knows enough about what was supposed to represent judge (Fraenkel & Wallen, 2009). Two experts (one of English language and the other an Educationist validated the observation sheet.

Teachers who operate without awareness of their students' points of view often doom students to dull, irrelevant experiences, and even failure (Brooks & Brooks, 1999). So, to take the students views a questionnaire was prepared which contained questions related to different classroom assessment techniques. Responses were taken on five point Likert scale. Cronbach alpha of this scale was 0.839, which was considered good to proceed on the study. Expert opinion was taken for the content validation of questionnaire.

Findings

This section will present analysis and results of data. Firstly, findings emerged from class observation have been tabulated and interpreted. The second part contains the findings emerged from students' viewpoints.

a) Analysis of Teachers Observations

This section describes the findings revealed through data collection by conducting class observation of sampled teachers teaching to B.Ed. (Hons) class to seek how far teachers are using different assessment technique in class. The data was tabulated and accordingly interpreted.

Table 1. *Students Attendance Pattern during observations*

Observation	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
1	30	32	41	40	41
2	36	36	41	35	40
3	39	37	35	36	46
4	40	38	36	31	30
5	42	38	46	32	32
6	40	40	32	35	34

Table 1 shows the attendance of students in the class. There were 55 students in B.Ed (Hons) class. All the students were not present even in a single observation. Number of students remained present in different observations varied from one teacher to another teacher's class. Teacher 1 observation, students' attendance varied between 30 (the lowest) to 42 (the highest). There is generally an increasing trend in student's attendance by teacher 1 observation. Teacher 2 observation, students' attendance varied between 32 (the lowest) 40 (the highest). This also shows an increasing trend in student's attendance by teacher 2 observation. Teacher 3 observation, students' attendance varied between 32 (the lowest) 46 (the highest). Teacher 4 observation, students' attendance varied between 40 (the highest) to 35 (the lowest). Teacher 5 observation, students' attendance varied between 46 (the highest) to 30 (the lowest).

Table 2. *Use of techniques by teachers during the observation*

Teaching Technique	Number of Teachers										Frequency
	1		2		3		4		5		
	1*	2**	1*	2**	1*	2**	1*	2**	1*	2**	
Asking questions	26	26	7	8	16	16	20	19	21	21	90
Discussion	6	8	9	9	7	3	10	10	4	4	35
Story Telling	5	4	3	4	1	1			4	4	13
Relevance with personal experiences	14	14	6	6	16	16	20	20	19	19	75
Appraise good values	5	4	2	1	4	3	1	1	2	2	12.5
Multiple Choice Questions			1	0							1
Encourage positive behavior			7	6			9	7	4	4	18.5
One minute paper					2	2					2
Think Pair & share					1	1			8	8	9
Chain of events					1	1	1	1	1	1	3
Portfolio					4	1					2.5
Good values					4	0	4	3	8	8	13.5

*1= observer 1, 2**= observer 2, (each teacher's classes were observed for six days)

Table 2 shows the use of different techniques by the 5 teachers in the class. It shows the observations of the two observers of six days. During the observation, average use of technique "Asking Questions" was the most frequent i.e. 90 times. The use of technique 2 i.e. "Discussion" was 35 times

in a week by all the five teachers. According to the observer 1 Story Telling technique was used by the teacher 13times in a week. Perception about the use of technique "Story Telling" differed slightly by the both observers. "Relevance with personal experiences" technique was used by the teacher75times in a week. "Appraise good values" technique was used by the teacher. The observer 1 rated it 14 times a week and observer 2 rated it 11 times a week. Multiple choice questions were least addressed technique, only one observer reported it 1 time. Different teachers encourage the positive behavior 18.5times in a week. Teacher 3 used the "one-minute paper "technique 2 times during observation. "Think pair and share" was used by teacher 3 and 5. Chain of events technique was used 33times by different teachers. Only one teacher asked about "Portfolio" 2.5times during observation. "Good values" was used 13.5times by teachers.

b) Analysis of Students' Views on their Teachers' Assessment

This section describes the findings revealed through data collection by administered a questionnaire to prospective teachers in B.Ed. (Hons) class to seek their views on how far their teachers are using different assessment technique in class to promote their learning. The data is tabulated and accordingly interpreted below.

Table 3. *Responses of students for the use of* formative assessment *techniques by teachers in their classes*

Formative Assessment Techniques						
Teachers		Teacher Asks Questions	Asks Students for Discussion	Sharing of Personal Experiences	Use One-Minute Paper	Weekly Report
1	M (N)	1.90(40)	2.35(40)	2.60(40)	3.48(40)	4.10(40)
	SD	1.01	.95	1.13	1.48	1.26
2	M (N)	2.13(40)	1.98(40)	2.83(40)	3.93(40)	4.18(40)
	SD	.91	1.17	1.20	1.21	1.17
3	M (N)	1.98(40)	1.85(40)	2.10(40)	3.55(40)	3.88(40)
	SD	.83	.83	.90	1.28	1.54
4	M (N)	2.03(40)	2.93(40)	3.03(40)	4.13(40)	4.13(40)
	SD	.97	1.44	1.27	1.16	1.36
5	M (N)	2.43(40)	2.53(40)	2.25(40)	3.50(40)	3.68(40)
	SD	1.43	1.20	1.13	1.52	1.54
Average	M (N)	2.09(40)	2.33(40)	2.56(40)	3.72(40	3.99(40)
	SD	1.06	1.19	1.17	1.35	1.38

Table 3 shows the responses of students about the use of different assessment techniques by the teachers of different subjects. Technique showed the negative response of students about "Teacher asks question" to the students so the mean score was 2.09 which shows means scores was near to disagree option and SD was 1.06. Standard deviation shows that the difference of responses of students from the average. This difference form average mean score is greater in the class of teacher 1 and 5. It may be

due to teachers of these subjects focused on presentation of content. Teachers of all subjects gave examples of their personal experiences the average mean was 2.56 it is near to the neutral option and SD was 1.17, students are not sure about use of technique. In response of statement 4 i.e. about the use of "One-minute paper" technique, the students agreed that teachers often use this technique in class. The average mean was 3.72 near to the agree option and SD was 1.35. Teachers of all subjects frequently prepared the weekly reports of students' performance as the average mean and SD was 3.99 & 1.38 respectively and means value near to agree option and showed positive response of students that teacher made weekly reports. Teachers were not using weekly reports because this activity was time consuming and teachers already have many academic responsibilities.

Table 4. *Responses of students for the use of* formative assessment *techniques by teachers in their classes*

Formative Assessment Techniques						
Teachers		Knowledge rating scale	Venn diagram	Brainstorming web	Alpha boxes	Mind map
1	M(N)	3.48(40)	3.70(40)	3.33(40)	3.93(40)	3.10(40)
	S.D	1.18	1.24	1.49	1.27	1.57
2	M(N)	3.33(40)	4.40(40)	3.50(40)	4.35(40)	4.08(40)
	S.D	1.65	.90	1.40	1.21	1.33
3	M(N)	3.30(40)	3.78(40)	3.23(40)	3.95(40)	3.85(40)
	S. D	1.73	1.49	1.69	1.95	1.85
4	M(N)	4.28(40)	4.13(40)	4.33(40)	4.33(40)	4.13(40)
	S.D	1.36	1.32	1.19	1.16	1.30
5	M(N)	3.90(40)	4.23(40)	4.35(40)	4.35(40)	4.08(40)
	S. D	1.39	1.35	1.23	1.23	1.33
Average	M(N)	3.66(40)	4.0540)	3.75(40)	4.1840)	3.85(40)
	S.D	1.51	1.29	1.48	1.26	1.39

Table 4 shows the responses of students about the use of classroom assessment techniques in class by the teachers of different subjects. Teachers of all subjects were frequently used the "knowledge rating scale" as a classroom assessment technique. The average mean and SD of statement was 3.66 and 1.51 respectively, means value near to the agree option meanwhile student response shows that teacher using this technique. Teachers mostly use "Venn diagram" in class; average mean and SD of statement was 4.05 & 1.29 respectively, mean value near to the agree option and students agreed that teacher using this technique. The technique of "brainstorming web" was mostly used by teachers as mean and SD of statement was 3.75 and 1.48 respectively mean value is close to the agree option. "Mind mapping" technique was repeatedly used in class; average mean and SD was 3.85 & 1.39 respectively.

Table 5. *Responses of students for the use of* formative assessment *techniques by teachers in their classes*

Formative Assessment Techniques

Teachers		Chain of events	Use of check lists	Asking about portfolio	Profile of admirable students	Encourage positive behavior
1	M(N)	3.0(40)	2.9(40)	2.6(40)	3.0(40)	2.1(40)
	S. D	1.4	1.5	1.3	1.7	1.0
2	M(N)	4.0(40)	3.0(40)	3.9(40)	3.6(40)	2.0(40)
	S. D	1.3	1.5	1.6	1.6	1.0
3	M(N)	3.4(40)	2.9(40)	2.0(40)	3.2(40)	1.9(40)
	S.D	1.5	1.6	1.0	1.5	.69
4	M(N)	4.0(40)	3.3(40)	3.8(40)	4.0(40)	1.9(40)
	S. D	1.5	1.6	1.3	1.3	.98
5	M(N)	3.8(40)	3.2(40)	3.8(40)	3.4(40)	2.3(40)
	S. D	1.6	1.5	1.4	1.5	1.2
Average	Mean(N)	3.6(40)	3.0(40)	3.4(40)	3.4(40)	3.7(40)
	S. D	1.5	1.6	1.6	1.6	1.9

Table 5 shows the responses of students about the use of different assessment techniques by the teachers of different subjects. Teachers of all subjects were often used the "chain of events" technique as the average mean and SD of statement was 3.6 & 1.5 respectively mean value is near to agree option. Students have view that teachers of all subjects commonly used the "check lists" as a classroom assessment technique. The average mean of statement remained 3.2 and SD was 1.6 means value near to the agree option. Teacher 3 was asked rarely about portfolio maintenance as the mean and SD of teacher 3 was 2.0 and 1.0 respectively. Only one teacher has the proper knowledge of this technique. But overall students have view that teachers often ask about portfolio as the average mean and SD of statement was 3.4 and 1.6 respectively. Students have view that all the teacher most of the time encourage positive behavior in the class. Mean and SD of the statement was 3.7. and SD was 1.9.

Table 6. *Responses of students for the use of* formative assessment *techniques by teachers in their classes*

Formative Teaching Techniques

Teachers		Appraises good values in	Observes students learning keenly	Questions at the end of lecture	Feedback to students
1	M(N)	2.18(40)	1.93(40)	2.38(40)	2.15(40)
	S. D	1.15	1.14	1.44	1.05
2	M(N)	2.95(40)	2.13(40)	2.50(40)	3.18(40)
	S. D	1.3	1.1	1.4	1.4
3	M(N)	1.98(40)	2.15(40)	1.93(40)	2.23(40)
	S. D	.62	.89	.89	1.17
4	M(N)	2.10(40)	2.50(40)	2.50(40)	2.90(40)
	S. D	1.03	1.38	1.30	1.45
5	M(N)	2.25(40)	2.60(40)	3.03(40)	2.93(40)
	S. D	1.30	1.32	1.46	1.42
Average	Mean(N)	2.09(40)	2.26(40)	3.47(40)	3.68(40)
	S. D	1.09	1.19	1.95	1.65

Table 6 shows the responses of students about the use of different assessment techniques by the teachers of different subjects. Students have view that teachers of all subjects "appraise good values"

in class. Average mean and SD of the statement was 2.09 and 1.09 respectively mean value near to disagree option. Because teachers generally prefer to talk about ethics but they were not using variety of ways. Students have view that teacher of all subjects rarely observed keenly students learning. Mean and SD of the statement was 2.26 and 1.19 respectively mean option near to neutral option. Teachers ask the questions at the end of lecture as the mean of statement was 3.47 and S.D was 1.95 mean values close to the agree option. Teachers most of the time gave the feedback on students learning. Average mean and SD of the statement was 3.68 & 1.65 respectively mean value near to agree option.

Discussion and Results

The observations of the two observers for six days show that the teachers used different techniques in the class. During the observation, asking questions was the most frequently used technique by all teachers. The technique discussion was also used by all the five teachers. Perception about the use of technique story telling differed slightly by the both observers, however it was used less by teachers. Teachers try to give examples by relating with personal experiences. Teachers less often appraise good values in class. Multiple choice questions were least addressed technique, only one observer reported it 1 time. The techniques one-minute paper, think pair and share, portfolio was less or not used techniques.

According to the both observers more focused techniques are asking question technique, discussion, storytelling and relevance with personal experience, appraise good values. Asking question technique was used by the teachers to increase the comprehension of the students. Discussion during the class helped to practice the application of gained knowledge. Storytelling and relevance with personal experience both techniques were used for comprehension. Appraise good values have a direct relation with affective domain of Blooms Taxonomy. All the five teachers have focused to help the students to increase comprehension and knowledge most of the time. Only three abilities of cognitive domain of Blooms Taxonomy were assessed i.e. knowledge and comprehension. The higher-level abilities i.e. analysis, synthesis and evaluation are not addressed by teachers in the classrooms. Affective domain has very low weightage in classroom assessment practices and the psychomotor domain is almost ignored.

Responses of students about the use of different assessment techniques by the teachers of different subjects shows that most of the time teacher asks question to the students. It may be due to teachers of these subjects focused on presentation of content. Teachers of all subjects gave examples of their personal experiences. the students were agreed that teachers often use one-minute paper technique in class. Teachers were not using weekly reports because this activity was time consuming and teachers already have many academic responsibilities. Students reported that different assessment techniques i.e. knowledge rating scale, Venn diagram, brainstorming web, mind mapping, chain of events, check lists" as a classroom assessment technique were not used in the class by different teachers. Only one teacher asked about portfolio maintenance but overall students have view that teachers seldom ask about portfolio. Students have view that all the teacher most of the time encourage positive behavior in the class. Students have view that teachers of all subjects appraise good values in class. Because teachers generally prefer to talk about ethics but they were not using variety of ways.

Conclusions and Recommendations

Although this study was done on a small scale, but it raises significant issues related to the quality of classroom assessment at public sector university. The teachers have a lucid idea of what classroom assessment is and use limited techniques to assess their students. Usually teacher asks questions and relies on giving examples. Other techniques i.e. one-minute paper weekly reports and concept notes are not used by teachers of any subject. Most of the lessons observed were teacher centered.

Student views shows that teachers usually use question answers and gave the examples in their class. Positives behavior is also encouraged by teachers of all subjects. The results of classroom

observations and views of students are almost same. So, we can generalize the findings of six observations of each teacher on the whole classes of each teacher. Although the current practices at university level do not favor classroom assessment, well-managed classroom assessment could result in improvement of educational standards, which every university is striving to achieve.

Faculty engaged in training of prospective teachers needs training in alternative classroom assessment techniques. It should be designed to promote the use of portfolio maintenance, think pair and share, peer self-assessment etc. Classroom assessment techniques related to the affective domain also needs attention by the teachers. The use of everyday ethical dilemma, profile of admirable students should be encouraged by the teachers. The psychomotor domain of learning may also be considered. Further researches in other disciplines at the university in how teachers assess their students learning in classroom context may be conducted.

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