PRE-SERVICE TEACHERS' APPROACHES TO CLASSROOM ASSESSMENT

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Abstract

Purpose of the study: The purpose of this study is to investigate the pre-service teachers' understanding of assessment concepts and their approaches to classroom assessment. The relationship between their approaches and confidence in classroom assessment was also established.

Methodology: A survey method was used to study the pre-service teachers' approaches to classroom assessment. One thirty-one second-year pre-service teachers from the University of Delhi, India participated in this study. A modified instrument namely 'Approaches to Classroom Assessment Inventory (ACAI)' which consists of two parts was employed Simple t-test, correlation and factor analysis methods were used to analyze the data.

Main Findings: Results showed that the pre-service teachers had a better understanding of three out of five issues which include assessment purpose, measurement theory, and confidence in monitoring the assessment. However, the study found that they have an inadequate understanding of assessment design and assessment practices. Furthermore, the correlation between their approach and their confidence was very low and non-significant. The results are discussed in the context of the assessment curriculum and its transaction at the secondary teacher education program.

Implication /Applications of this study: Understanding of what pre-service teachers think about assessment issues within the current educational context helps in preparing them as better teachers. The study may provide some evidence for policymakers and curriculum framers [developers] that the importance of practical aspects of assessment in the secondary teacher education curriculum.

Novelty/Originality of this study: No study has been done so far on the different aspects of assessment approaches and its issues at pre-service teacher's level in India.

Keywords: *Classroom Assessment, Assessment Approaches, Assessment Literacy, Pre-service Teachers, Teaching and Learning, Education.*

INTRODUCTION

Assessments act as a tool to improve student learning by improving or modifying instruction in the teaching-learning process. Knowing more about the assessment process by teachers will help them to assess students' performance as well as evaluating their own instruction in order to produce more desirable results. These were expected in the curriculum objectives to motivate students to learn. Therefore, teachers must have an assessment literacy to choose the most appropriate assessment strategy (e.g., gives the most accurate and relevant information) for students to improve their own learning and achievement.

Due to the pivotal role of assessment practices within the educational system, there have been increasing demands to further develop the teachers' assessment literacy. Teacher education program plays a vital role in developing the teacher's assessment literacy. During a teacher education program, pre-service teachers are exposed explicitly and implicitly to different conceptions of assessment through the instructor's pedagogy, coursework, and practical experiences. Mertler (2004) pointed out the benefits of learning about assessment and its practices to grow teachers' assessment literacy:

> "Pre-service training of secondary teachers in the concepts and techniques of classroom assessment is critical and should be enhanced through thoughtful examination and research into the knowledge and skills that these secondary teachers will need to possess once they assume the responsibilities for their own classrooms and students" (p. 62).

Assessment is always seen as an integral part of the teacher education curriculum in India. However, it was not given a specific focus in the past; instead, it has always been part of the other curricular components in the teacher preparation programs. National Curriculum Framework, India (NCF, 2005) observes that assessment is important to improve the teaching-learning process, learning materials and to see to what extent capabilities of learners have been developed. It also proposed the idea of school-based evaluation as a long-term goal of examination reform. Taking the cue from NCF (2005), the National Curriculum Framework for Teacher Education, India (NCFTE, 2009) emphasizes that student teachers need to be made aware of the history of evaluation, current practices and contemporary debates on perspective and practice of testing. It suggested a provision for the theoretical component of assessment in pedagogic and curriculum studies (in teacher education curriculum) along with the hands-on experience of designing assessment methods.

Following this, the National Council for Teacher Education (NCTE) Regulations [Recognition Norms and Procedure], India, in 2014 indicated that a course on the theoretical perspectives on 'assessment for learning' should be included in the teacher preparation curriculum under curriculum and pedagogic studies.

LITERATURE REVIEW

A number of studies examined teacher's knowledge about assessment and their perceptions on assessment competence (Alkharusi et al., 2011; Davidheiser, 2013; Gotch& French, 2013; King, 2010; Mertler, 2003; Mertler& Campbell, 2005). The findings of these studies indicated that the teachers might not have been well prepared to assess student learning and they had low assessment knowledge for implementing the high-quality assessment. Particularly, pre-service teachers had limited assessment capabilities (Coombs, 2018; Cowan, 2009; DeLuca & Klinger, 2010; MacLellan, 2004; Volante & Fazio, 2007).

Results of the studies by Brown (2004), Harris & Brown (2009), Hirschfeld & Brown (2009), Brown et al (2011) and Brown &Remesal (2012) suggested that teachers' conceptions of assessment purposes may have more to do with the educational context than individuals' knowledge and skill. Researchers in the field of assessment (DeLuca et al., 2016b; Klenowski, 2009; Willis et al., 2013) viewed that classroom teachers' assessment literacy is dependent on the relationship between the student, teacher, and context, not a set of pre-defined abilities that need to be mastered. Hence, teachers' approach to assessment comprises both conceptual understanding and practical knowledge of assessment within the teaching context (DeLuca et al., 2016a).

Many studies on the assessment course's effectiveness indicated that pre-service teachers' knowledge of assessment practice had not adequately increased to meet the contemporary need of doing an assessment in the regular teaching (Abbott, 2016; Beziat& Coleman, 2015; Deneen& Brown, 2016; Izci&Caliskan, 2017). In the Indian context, very fewer researches are happening in this area. This kind of researches is important to understand pre-service teachers' approach from time to time, and also to understand indirectly the influence of assessment curriculum that is introduced in recent years in the pre-service teacher education program.

Two research questions guided this study,

1. What are the pre-service teachers' approaches to classroom assessment with reference to the assessment themes?
2. To what extent pre-service teachers developed the confidence to engage with classroom assessment practice?

METHODOLOGY

Participants and Sampling: A survey method was used to study the pre-service teachers' approaches to classroom assessment. The participants were 131 of 250 second year pre-service teachers studying Bachelor of Education (B.Ed.) program at the University of Delhi, India. These participants had their Bachelor's or Masters's degree in a basic knowledge discipline before pursuing B.Ed. The second-year pre-service teachers who were available and willing to participate comprised the sample of the study (incidental sampling).

Context of the study

The second-year pre-service teachers were studying 'Assessment for Learning' as a foundation course in B.Ed. program. The course was designed to develop an understanding of the assessment. The content of the course includes the basic concept of assessment, the purpose of assessment in different paradigms (behaviourist, constructivist and socio-culturalist paradigm) and analysis of different assessment practices. In addition, the course consists of the concepts of alternative assessment methods, grading, and feedback that help the pre-service teachers to enhance the students' learning. Participants almost completed studying the course before data collection.

The tool used for the study

The Approaches to Classroom Assessment Inventory (ACAI) developed by DeLuca (2016a) was used in this study. The original ACAI has three parts.: Part-1: Approaches to classroom assessment, Part-2: Confidence in classroom assessment, and Part-3: Assessment professional's learning priorities and preferences. Part 1 contained 60 items organized into 5 scenarios. Each scenario examines the teachers' approach to classroom assessment through 4 themes such as Assessment Purpose, Assessment Process, Assessment Fairness, and Measurement Theory. Each theme had an association with three approaches (Table 1).

Table 1: Assessment themes and its related approaches

Assessment theme	Approaches		
Assessment purposes	Assessment of learning	Assessment for learning	Assessment as learning
Assessment process	Designing	Administration and scoring	Communication
Assessment Fairness	Standard treatment	Equitable treatment approach	Differentiated approach

	approach		
Measurement Theory	Reliability	Validity	Reliability and Validity

Part 2 of the original ACAI contained 26 items (Likert type) to determine teachers' confidence in relation to contemporary classroom assessment practices. Part 3 of the ACAI contained 12 items (Likert type), designed to determine teachers' professional learning priorities and preferences in the assessment. While taking cognizance of the Delhi University context, the 4 modifications made in the tool were: (i) a minor modification (a change of scenario) was made in Part 1; (ii) assessment as learning approach in Assessment Purpose theme (of Part 1) was removed as it was not suitable to the Indian context; (iii) Scenario 2 (of Part 1) in the original ACAI was not reflecting to the Indian context, so it was replaced with a new scenario (with its approaches related themes) and, (iv) Part 3 of the ACAI was not included (i.e., Professional Learning Interests in Assessment). Hence modified ACAI has two parts: Part A & Part B.

Scoring the responses

Part A consists of 5 scenarios (with 55 items) that examine the pre-service teacher's approach to classroom assessment. Pre-service teachers were asked to prioritize approaches, against each scenario. Each scenario has 11 items to be responded. To examine the appropriateness of the pre-service teachers' approaches to the assessment, criteria for each theme across five scenarios were developed. For example, criteria for the first theme (Assessment purpose) of scenario 1, Assessment for learning is more appropriate than Assessment of learning. Hence pre-service teachers were expected to choose Assessment for learning as a first priority rather than Assessment of learning. Participants get score 1 if they prioritized an appropriate approach to each item, otherwise, they were given 0 as a score. For each participant, the total score was calculated by adding their scores across 55 items from five scenarios.

Part B of the modified ACAI contains the original 15 items of ACAI. This part is to determine pre-service teachers' confidence in relation to their contemporary classroom assessment practices. In the previous studies, 12 out of 15 items worked well in factor analysis. In the current study pre-service teachers were asked to self-assess their confidence level to each of the 15 items on a 5 point scale: 5 (strongly agree), 4 (agree), 3 (can't say), 2 (disagree), and 1 (strongly disagree).

Prior to the main data collection, the modified ACAI had been piloted with 11 pre-service teachers who were studying 2nd year of 2-year B.Ed. program in one of the institutions (this sample was not part of the final data). The test-retest method (with a one-month gap) was used to calculate the reliability of the data. The pilot data were analyzed to ascertain how each item performed individually and collectively. In Part A (Approaches to classroom assessment) total score for each individual was calculated as per the criteria. Correlation between the test and re-test on total scores was calculated as .583, considered as moderate reliability.

Reliability estimates and Factor Analysis of the data

Table 2 gives the demographic characteristics of the participants. For Part A of the modified ACAI (Approaches to assessment), pre-service teachers' appropriateness of the approaches to the assessment was examined with the set criteria. On the final sample of 131 participants, Cronbach's alpha reliability was found to be .707, considered as acceptable reliability.

Table 2: Demographic characteristics of the participants (n=131)

Variable	Category	N	%
Gender	Male	38	29
	Female	93	71
Educational Qualification	Undergraduate	89	68
	Postgraduate	42	32
Medium of Instruction	English	105	80
	Hindi	26	20
Pedagogy	Science & Maths	54	41
	Social science	42	32
	Language	23	17
	Commerce	12	9

In the item analysis of Part B, the correlation of the items with the total score was found above the acceptable level (.3 to .83), except 1st and 2nd items. However, the reliability of the data did not increase much by removing those items; hence retained those 2 items in order to maintain the number of items for analysis. For data on Part B, Cronbach's alpha reliability was found to be 0.707 considered as acceptable reliability. An exploratory factor analysis was conducted on Part B of the modified ACAI (teacher's confidence in classroom assessment). Principal component analysis with Varimax rotation was used to examine underlying factors. In order to determine the number of subscales, the eigenvalue >1.5 rule and a Scree test were used. Two subscales were found, which were similar to previous studies and named Factor-I as Monitoring, Analyzing and Communicating Assessment Results; and the Factor-II as Assessment Design,

Implementation and Feedback (DeLuca et al, 2016a, 2016b). Mean and the standard deviation was calculated for resulting factors (subscale), Cronbach's alpha was found to be .778 for Factor-I (Monitoring, Analyzing and Communicating Assessment Results) and .510 for Factor-II (Assessment Design, Implementation and Feedback). Statistical significant differences across demographic variables with factors and the total score of Part B were estimated. Then, the relationship between the participant's approaches to assessment and their confidence level in classroom assessment was examined.

ANALYSIS

The findings of the study are presented in three sections below.

Pre-service teachers' approaches to classroom assessment

On Part A, as per the criteria of appropriate approaches, pre-service teachers' scores in each theme across five scenarios and samples' total score was calculated (Table 3). Independent t-test and ANOVA were used to determine the significant association between the demographic variables and approaches to classroom assessment.

The data analysis indicates that participants scored high in three approaches out of 11 - Assessment of Learning, Assessment for Learning and Reliability, and scored relatively low in three approaches – Differentiated treatment, Design and Validity.

Table 3: Total score of all participants on approaches under each theme

Theme	Approach	Sample Total Score (out of maximum score of 655)
Assessment Purpose	Assessment of Learning	590
	Assessment for Learning	590
Assessment Process	Design	270
	Scoring	337
	Communication	307
Assessment Fairness	Standard treatment	404
	Equitable treatment	291
	Differentiated treatment	224
Measurement Theory	Reliability	457
	Validity	280
	Balanced	317

The mean, standard deviation (SD) of the theme-wise score, total score and correlation between theme score with the total score was calculated (Appendix A). The frequency of the total scores indicated that pre-service teachers' appropriate approach to scenarios was distributed normally.

The t/F test revealed that there were no significant differences in total score within each of the demographic variables, except on the gender variable. There was a significant difference between male and female samples in their approaches to classroom assessment (t=3.038, p=.003). Similarly, significant differences were found with the gender variable in two theme totals (Assessment Purpose and Measurement Theory) and no other significant differences found with the other demographic variables on the four theme total scores.

Pre-service teachers' Confidence level in classroom assessment practices

Part B of the modified ACAI was responded by pre-service teachers to report their confidence in assessment practices on a five-point scale. Two subscales were found from the factor analysis which was similar to previous studies and, named the first factor as 'Monitoring, Analyzing and Communicating Assessment Results' and named the second factor as 'Assessment Design, Implementation, and Feedback' (DeLuca et al, 2016a, 2016b). Mean, SD and reliability of both subscales were calculated (Appendix B). Three items with the highest mean were 'I engage students in monitoring their own learning and using assessment information to develop their learning skills and personalized learning plans' (M=4.3, SD=.66), 'I monitor and revise my assessment practice to improve the quality of my instructional practice' (M=4.29, SD=.65) and 'I provide useful feedback to students to improve their learning' (M=4.29, SD=.72). The two items with the lowest means were,' I provide timely feedback to students to improve their learning' (M=3, SD=1.32), 'My assessment practices are necessary to align with established curriculum expectations' (M=2.41, SD=1.02). These suggested that pre-service teachers showed great confidence in monitoring assessment and in providing useful feedback, and showed the least confidence in providing timely feedback and in assessment practices.

Mean and SD of scores on Part B were 57.30, 5.93. Correlation between the total score of Part B and its subscales (Monitoring and Assessment Design) was found to be .835 and .717. Regarding significant differences in categories of each demographic variable, the Medium of instruction has a significant difference in Assessment design subscale and

statistically significant differences with the other demographic variables were not found on the total score of Part B and on its subscales.

Relationship between pre-service teachers' approaches to assessment and confidence level in assessment practices

To examine relationships between pre-service teachers' approaches to assessment and confidence level in assessment practices correlations between Part A components and Part B components were calculated (Table 4).

Table 4: Correlation between components of Part A and Part B

	Part B Total score	Subscale-I Monitoring, Analyzing and Communicating Assessment Results	Subscale-II Assessment Design, Implementation, and Feedback
Part A (Total)	.170	.170	.087
Assessment Purpose (Total score)	.136	.106	.108
Assessment Process (Total score)	.020	.009	.024
Assessment Fairness (Total score)	.121	.148	.028
Measurement Theory (Total score)	.146	.143	.073
Note: None of the correlation is significant at .05			

Results indicated that overall pre-service teachers' approaches to assessment in the context-based scenarios have less correlation with their confidence level in assessment practices.

CONCLUSION

The purpose of this research was to study the pre-service teachers' assessment literacy. Specifically, the study aimed to analyze preservice teachers' (a) approach to classroom assessment (b) confidence in contemporary assessment practices by using modified ACAI. After NCTE Norms and Regulations (2014), for the first time, the course on Assessment became compulsory in the graduate teacher education program. This study result is probably the earliest evidence that how an Assessment course influences pre-service teachers' preference to assessment and their confidence level in relation to contemporary assessment practices in the framework of the sociocultural conception of assessment literacy. Further, these findings provide a basis for constructing pre-service assessment education to enhance the school-students' learning and achievement.

Based on the 131 pre-service teachers from the University of Delhi, the study found that pre-service teachers had an understanding of assessment purpose and measurement theory themes which are part of the curriculum. It also indicating participants didn't have a much understanding of 'Assessment process and Fairness themes, and they had less understating in three approaches - Differentiated, Design and Validity which are related to the practical aspect of the assessment. This is probably due to the lack of emphasis on the teacher education program. Additionally, the reason behind this result could be the lack of opportunities during their Internship program to design and use differentiated assessment and to increase the validity of the test. This kind of unbalanced understanding of approaches to assessment may affect their assessment proficiency in the future. One significant difference based on gender was found in the participants' approaches to assessment. This result was in contradiction to the findings of previous studies (Coombs et al., 2017; DeLuca et al., 2016a). The t value was significant, but the mean difference was small and the sample of female and male were not equal. Hence further research is required to understand better the gender difference.

The majority of the pre-service teachers in this study were fairly consistent in their first priorities within assessment themes. They prioritized assessment for learning, communication, differentiated treatment, and validity & balanced approaches to the respective assessment theme. The current study result supports previous studies that used ACAI (Coombs et al., 2017; DeLuca et al., 2016b).

Similar to the previous studies by DeLuca et al (2016a, 2016b), the current study is also highlighted that participants had the skills of monitoring and communicating assessment results. However, they did not have enough skill/confidence level in designing and implementing the assessment. This indicates that the teacher education program curriculum needs to focus on Assessment Design and Assessment Implementation.

Further, the study found that there was a gap between the pre-service teachers' approaches and their confidence level in assessment practices. Similar to previous findings (Abbott, 2016) pre-service teachers' assessment knowledge seem to have less influence in assessment practice (skill). Overall, the current study highlighted that pre-service teachers have a limited understanding and exposure of assessment knowledge and skill to conduct a high-quality assessment.

Influence of pre-service teacher education

Many types of research have indicated that pre-service teacher education programs influence teachers' knowledge and skills in assessment (Bachor& Baer, 2001; Coombs et al., 2018; Deneen& Brown, 2016; DeLuca et al., 2016b; Graham, 2005; Izci&Caliskan, 2017; Volante & Fazio, 2007). The findings of the current study highlighted that a course on 'Assessment for learning' enhanced the pre-service teachers' knowledge of assessment, but it had not adequately developed the skill to design high-quality assessment that is required in the current educational movements. Therefore, there is a need to provide opportunities for pre-service teachers to see and experience the benefits of assessment during their internship. If pre-service teachers experience the benefits of assessment in terms of positive outcomes for their students and for themselves, it will increase the importance of the role of assessment in the teaching-learning process (Izci&Caliskan, 2017). Therefore, the current study findings give evidence for policymakers and curriculum framers that the focus also needs to be on practical aspects of the Assessment curriculum. Developing a broad foundational knowledge in all forms of assessment during teacher education is necessary to increase the skills in the fair and equitable assessment as well as the learners' learning outcome.

LIMITATIONS

Although findings that emerged from this study are important, the following limitations are identified. First, the study was conducted among the institutions of the University of Delhi only. However, different Universities in India have different syllabus/curriculum on assessment. Hence comparison or generalization to a large population of pre-service teachers was difficult. Second, the participants were only the second batch of the students who studied exclusively assessment course under the new pre-service curriculum. Hence, in comparison with any other previous sample participants on assessment was not possible. The other limitation of the study was that the ACAI presents items each describing a specific approach to assessment. In the current study expression of personal priorities by pre-service teachers was not based on their experiences of 'doing' classroom assessment. They have not yet been allowed to 'do' assessment independently. Also, this survey did not ask the participants either to explain why particular approaches were prioritized or to describe their own priorities. Further studies need to be carried out for better understanding and consequent implementation practices.

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Appendix A

Theme	Mean	SD	Correlation with Total (without respective theme score)
Assessment Purpose	9.01	1.689	.226**
Assessment Process	6.98	2.361	.122
Assessment Fairness	7.02	2.712	.335**
Measurement Theory	8.05	2.694	.331**

Note: ** Correlation is significant at the 0.01 level

Appendix B

	Items	Mean (SD)	Monitoring, Analyzing and Communicating Assessment Results	Assessment Design, Implementation and Feedback
1	My practices have a clear purpose (e.g., diagnostic, formative, summative) that supports teaching and learning towards achievement of curriculum expectations.	4.13 (.73)		.338
2	My assessment practices are necessary to align with established curriculum expectations.	2.41 (1.02)		.464
3	I provide adequate resources, time and learning opportunities to students for assessment.	3.49 (1.26)		.623
4	I communicate purposes and uses of assessment to parents/guardians when appropriate.	4.03 (.88)	.676	
5	For each student, I use multiple, well-designed assessments to measure learning so that I am confident in the grades I assign.	3.91 (.85)	.421	
6	I monitor and revise my assessment practice to improve the quality of my instructional practice.	4.29 (.65)	.588	
7	I am able to use a variety of strategies to analyze test and assessment results at both student and class levels.	4.07 (.88)	.721	
8	I ensure that my assessments are fair, reliable, and provide valid information on student learning.	4.20 (.78)	.599	
9	I provide timely feedback to students to improve their learning.	3.02 (1.32)		.519
10	I provide useful feedback to students to improve their learning.	4.29 (.72)	.610	
11	My reports are based on a sufficient body of evidence and provide a summary of student learning toward meeting curriculum expectations.	3.87 (.73)		.529
12	Throughout units of instruction, I regularly integrate various forms of formative and diagnostic assessment.	3.96 (.77)	.560	
13	I engage students in monitoring their own learning and using assessment information to develop their learning skills and personalized learning plans.	4.30 (.66)	.678	
14	I have thought deeply about my approach to assessment.	3.66 (.98)		.631
15	I am able to articulate my personal philosophy of assessment recognizing its alignment and misalignment with assessment policies and theory.	3.61 (.79)	.497	
	% of variance explained		22.90	13.07
	Reliability		.778	.510