



## Classroom Environment And Student's Perception - An Exploratory Empirical Assessment

**Surendar Rawat**

Instrumentation Department, V. E. S. Polytechnic, Sindhi Society, Chembur, Mumbai – 400071

### ABSTRACT

An essential question in the field of assessment of classroom environment concerns the relationship of this model with student's perception inside the classroom. This study attempts to make a rigorous empirical investigation of the relationship between classroom environment and four prevalent factor of student's perception. It assesses the validity and reliability of the measures used and discusses the results of the analysis, which show that each of the four factors used has a substantial relationship with two or more of the variables of student's perception about classroom environment.

### KEYWORDS

Classroom assessment, classroom environment, student's perceptions, learning assessment, performance improvement, personal involvement, life-long learning

### INTRODUCTION

The importance of classroom assessment in India has been increasingly recognized since the change of old curriculum paradigm into the newest concept of curriculum that places students as the centre of learning. More specifically, it becomes a teachers and government's concern when the new curriculum is implemented.

The educators of India realize that classroom assessment should be viewed as a process rather than as a product in which assessment purpose mainly focuses on to know how the student's progress in learning and facilitating them to get success in learning. The educators are forbidden to see a classroom as a black box where certain inputs, pupils, teachers, other resources, management rules and requirements, parental anxieties, standards, tests with high stakes, and so on, from the outside are fed into the box [1]. But educators have to realize that a classroom is a place for the students to construct knowledge through critical thinking, primary resources, and hands-on activities [2]. Thus, assessment of classroom environment is a part of teacher's work to encourage students in accepting this role.

Educators must replace their assessment of learning with a more balanced approach, by focusing on assessment for learning along with assessment of learning [3]. More recently, assessment discourse has shifted to assessment as learning that identifies feedback as an essential element for students to the teaching and learning process [4].

With this present view of assessment, the application of classroom assessment has taken a lot of changes in the way educators perceive it, especially in India. Assessment is not, however, being implemented in just the traditional sense of assessing learning for accountability purposes like grades, graduation, admissions or certification. As an alternative, assessment has itself become a medium embodying and setting the stage for learning [5].

Assessment purposes, assessment methods, selection of assessment methods, assessment quality, feedback on assessment results, assessment background and preparation, perception of students, and assessment policy were the key elements for assessment of classroom environment [6]. From Brookhart's theoretical model and other motivational literature, McMillan and Workman developed the following assessment practices that may enhance student motivation to learn: (a) being clear about how learning will be evaluated, (b) providing specific feedback following an assessment activity, (c) using mistakes to show students how learning can be improved, (d) using moderately difficult assessments, (e) using many assessments rather than a few major ones, (f) using

authentic assessment tasks, (g) using pre-established scoring criteria for evaluating student work, (h) providing incremental assessment feedback, and (i) providing attainable grading criteria prior to administering the assessment task [7], [8]. Analogous to McMillan and Workman practices, Stiggins and Chappuis emphasised that classroom assessments should focus on clear purposes, provide accurate reflections of achievement, provide frequent descriptive feedback on work improvement rather than judgmental feedback, and involve students in the assessment process as the main four conditions that together may develop positive motivational behaviour in students [8], [9].

In light of these educational perspectives, student's perceptions of the classroom assessment environment have been thought to influence their motivational beliefs and achievement [10], [11]. In an effort to validate these inferences, the present study interprets the measurement and assessment of student's perceptions of the classroom environment.

### PURPOSES OF THE STUDY

Each classroom has its own assessment environment as perceived by the students and from the teacher's assessment practices at the end of each semester. The purpose of this study is only to measure and assess the student's perceptions of the classroom environment and not the teacher's assessment practices. A total of 260 from 450 students enrolled in the final year diploma were scaled with preliminary data available from the questionnaire related to assessment of classroom environment for management course.

### MEASUREMENT

#### Factor Analysis: Analysis of primary data

The Factor Analysis was applied for the identification of the core factors from the large number of variables. This technique was considered appropriate as it requires no pre-existence functional relationships between the variables and is a well-known for data reduction. Primary data collected and extracted from filled 260 questionnaire forms received from the students of final year diploma from one of the premium institute in Mumbai, was subjected to the SPSS software for the Initial analysis. Overall, there were 15 criteria, which were having an impact on student's learning, performance, understanding and application level in classroom environment for management course. However, to come out with a Discriminant Analysis output with all the 15 criteria would lead to a very lengthy model and thus to counter the same, the Factor Analysis was used for the data reduction.

#### Test Hypothesis

Null Hypothesis  $H_0$ : Statistically there is no correlation significant different from 0 between variables affecting the class-

room environment.

Alternate Hypothesis  $H_1$ : At least one of the correlations between the variables is significantly different from 0.

**Test Adequacy of Sample: KMO and Bartlett's Test**

The Kaiser-Meyer-Olkin is the measure of sampling adequacy, which varies between 0 and 1. The values closer to 1 are better and the value of 0.6 is the suggested minimum. The Bartlett's Test of Sphericity is the test for null hypothesis that the correlation matrix has an identity matrix and hence provides a minimum standard to proceed for Factor Analysis.

**Table 1: KMO and Bartlett's Test result**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.754
Bartlett's Test of Sphericity	Approx. Chi-Square 823.540
DF	105
Sig.	.000

**KMO:** Normally, KMO lies between 0 and 1 ( $0 < KMO < 1$ ), but if  $KMO > 0.5$ , then the sample is adequate. Here,  $KMO = 0.754$  which indicates that the sample is adequate and we may proceed with the Factor Analysis.

**Bartlett's Test of Sphericity:** Taking 95% level of Significance,  $\alpha = 0.05$ , the p-value (Sig.) of  $.000 < 0.05$ , therefore the Factor Analysis is valid. As  $p < \alpha$ , we therefore reject the null hypothesis  $H_0$  and accept the alternate hypothesis ( $H_1$ ) that there may be statistically significant correlation between variable.

The Kaiser-Meyer Olkin (KMO) and Bartlett's Test measure of sampling adequacy was used to examine the appropriateness of Factor Analysis. The approximate of Chi-square is 823.50 with 105 degrees of freedom, which is significant at 0.05. The KMO statistics of 0.754 is also large (greater than 0.50). Hence Factor Analysis is considered as an appropriate technique for further analysis of the data.

**Eigen values**

The initial components are the numbers of the variables used in the Factor Analysis and in this study components having eigen values 1 are considered and selected for further analysis. However, not all the 15 variables will be retained. In the present research only the 4 factors will be extracted by combining the relevant variables. The Eigen values are the variances of the factors. The total column contains the Eigenvalue. The first factor accounts for the most variance and hence has the highest Eigen values. The next factor accounts for as much of the left over variance as it can and the same will continue till the last factor. The percentage of variance represents the percent of total variance accounted by each factor and the cumulative percentage gives the cumulative percentage of variance account by the present and the preceding factors. In the present research the first 4 factors explain 53.10% of variance.

The rotation sums of the squared loading represent the distribution of the variance after the varimax rotation with Kaiser Normalisation. The varimax rotation tries to maximize the variance of each of the factor.

**Table 2: Extraction from Eigen value**

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	1	3.70	24.70	24.70	3.70	24.70	24.70	2.59	17.25
2	2.04	13.58	38.28	2.04	13.58	38.28	2.07	13.82	31.07
3	1.15	7.64	45.91	1.15	7.64	45.91	1.77	11.78	42.86
4	1.08	7.19	53.10	1.08	7.19	53.10	1.54	10.25	53.10
5	0.92	6.11	59.22						
6	0.90	6.03	65.25						
7	0.83	5.50	70.75						
8	0.80	5.33	76.07						
9	0.67	4.46	80.54						
10	0.66	4.40	84.94						
11	0.60	3.97	88.91						
12	0.48	3.17	92.08						
13	0.43	2.89	94.97						
14	0.43	2.86	97.83						
15	0.33	2.17	100.0						

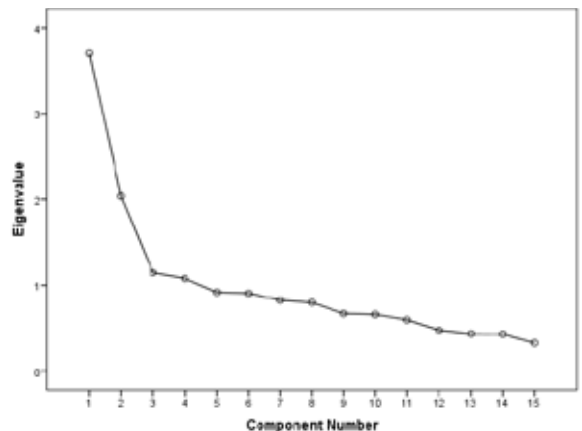
1	3.70	24.70	24.70	3.70	24.70	24.70	2.59	17.25	17.25
2	2.04	13.58	38.28	2.04	13.58	38.28	2.07	13.82	31.07
3	1.15	7.64	45.91	1.15	7.64	45.91	1.77	11.78	42.86
4	1.08	7.19	53.10	1.08	7.19	53.10	1.54	10.25	53.10
5	0.92	6.11	59.22						
6	0.90	6.03	65.25						
7	0.83	5.50	70.75						
8	0.80	5.33	76.07						
9	0.67	4.46	80.54						
10	0.66	4.40	84.94						
11	0.60	3.97	88.91						
12	0.48	3.17	92.08						
13	0.43	2.89	94.97						
14	0.43	2.86	97.83						
15	0.33	2.17	100.0						

Extraction Method: Principal Component Analysis.

On the basis of Varimax Rotation with Kaiser Normalisation, 4 factors have been extracted from 15 variables. Each factor is created from all those variables that have factor loadings greater than 0.45. These 4 extracted factors enlightened 53.10% to the variability in establishing the judgement about classroom environment.

**Scree Plot**

The scree plot is the graphs of eigenvalue against the each factor. We can see from the graph that after factor 3 there is a sharp change in the curvature of the scree plot. This shows that after factor 3 the total variance accounts for smaller and smaller amounts, but as 4<sup>th</sup> factor belongs to a component with eigen value 1, hence factor 4 is also considered.



**Figure 1: Scree Plot**

**Identification of the Core Factors**

The Rotated Factor Matrix represents the rotated factor loadings, which are the correlations between the variables and the factors. The factor column represents the rotated factors that have been extracted out of the total factor. These are the core factors, which have been used as the final factor after data reduction. According to the grouping of the factors, each group of factors is named which will represent the grouped factor and represent the factors.

**Table 3: Rotated Component Matrix**

Rotated Component Matrix <sup>(a)</sup>				
Variables	Components			
	1	2	3	4
Use of instruction language (English)			.677	
Area of concentration			.712	
Encourages thinking ability		.762		
Continuous performance feedback		.586	.466	
Chance of improvement		.505	.310	
Real life use				.720
Responsibility to learn				.792
Alternative assessment		.586		

Judgement of difficulty level	<b>.563</b>	.416		
Increases proficiency	<b>.681</b>			
Result or knowledge	<b>.798</b>			
Connection between material and assigned tools	<b>.731</b>			
Sensitivity of task	.322	<b>.508</b>		.308
Transparent grading system	<b>.535</b>		.330	
Reflection of effort	.399		<b>.491</b>	

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

**a. Rotation converged in 7 iterations.**

The above matrix gives the correlation of the variables with each of the extracted factors. Usually, each of the variables is highly loaded in one factor and less loaded towards the other factors. To identify the variables, included in each factor, the variable with the value maximum in each row is selected to be part of the respective factor. The values have been highlighted (bold) in each of the rows to group the 15 variables into 4 core factors. Thus, after rotation, Factor 1 accounts for 17.25% of the variance; Factor 2 accounts for 13.82% of the variance; Factor 3 accounts for 11.78% of the variance; Factor 4 accounts for 10.25% of the variance. All the 4 factors together explain for 53.10% to the variance in perception of classroom environment.

**Name of the four core factors**

The variables that have been included into each core factor have been named as under:

**Table 4: Name of the four core factors**

Factor	Factor Name	Variables Included
1	Learning Assessment	1. Judgement of difficulty level 2. Increases proficiency 3. Result or knowledge 4. Connection between material and assigned tools 5. Transparent grading system
2	Performance Improvement	1. Encourages thinking ability 2. Continuous performance feedback 3. Chance of improvement 4. Alternative assessment 5. Sensitivity of task
3	Personal Involvement	1. Use of instruction language (English) 2. Area of concentration 3. Reflection of effort
4	Life-long Responsibility	1. Real life use 2. Responsibility to learn

**Conclusions of Factor Analysis**

The Factor Analysis has thus identified 4 core factors that affect the student's classroom environment. They were categorized as – (a) learning assessment (b) performance improvement (c) personal involvement and (d) life- long responsibility.

**Factor 1 – Learning Assessment**

Classroom assessment should have a clear purpose that supports grading system and learning. Students should be implicitly engaged in the assessment process and there should be alternative use of assessment methods to enhance their learning. This factor with 17.25 % variability suggests learning assessment as a core factor and improves ability of the students to perform well and develops an enhanced classroom environment. Therefore it is necessary for the teachers - to design and develop a proper and clear grading system; emphasize more on learning; giving assignments and tests related to learned subject materials and comparing student's performance.

**Factor 2 – Performance Improvement**

The second factor relates to classroom assessment is improvement in performance. This factor explains 13.82% of the variability on the assessment of classroom environment. For per-

formance improvement the teacher other than teaching must give tests, homework and assignments to students in order to assess their performance and encourage thinking level. The assignments and homework helps students to reinforce what's being taught in the classroom and aids them to demonstrate essential skills required for time management, organization, task completion and responsibility. The teacher has to provide continuous feedback about student's performance and must give them chance to correct their mistakes.

**Factor 3 – Personal Involvement**

This factor contributes to 11.78% variance in determining the students approach in classroom environment. The third factor describes the responsibility of teachers in guiding students to develop their - fluency of instruction language; identifying areas to be concentrated and effort to be taken while studying. As English being an instruction language, teachers have to ensure that students must put correct effort in studying the subject to achieve good result. The teacher must also help students to identify areas where they need to concentrate more.

**Factor 4 – Life-long Responsibility**

The fourth factor characterizes student's responsibility in applying learned material to real-life condition. This factor explains 10.25% of the variability on the performance of students in assessment of classroom environment. The teacher should use everyday examples which will help the students to develop relations between learning in classroom and real life situation. This is an easy way to help students to make them understand that they are personally responsible to connect what they're being taught and how they can apply the material in real-life.

**DISCUSSION AND CONCLUSION**

The main purpose of this paper has been to acquaint teachers with some techniques and ideas related to classroom environment research which can be used as a tool to assess and improve their classroom environment. The favourable outcomes of the assessment showed that the participating student's perceptions of the classroom environment in management course centered around four aspects: learning assessment, performance improvement, personal involvement and life-long responsibility.

The learning assessment concentrates on classroom environment practices that enhance student learning and proficiency by making asking them to write tests and assignments with moderate difficulty, encouraging them by comparing their performance with classmates, emphasize on steadiness concerning grading and learning and providing a well-matched between the learned materials and the assigned homework and tests. The performance improvement involves assessment practices that provide students with their performance feedback, areas that they need to concentrate and improve, encourages their thinking level, giving them opportunities to improve their performance, provide them variety of stimulating assessment tasks. The personal involvement centres on assessment practices where the students personally need to develop a knack over English as an instruction language. The teachers should help the students to identify their weak areas so that they can concentrate more and put effort in order to achieve good result in the concern subject. Life-long responsibility focuses on accountability of the students to be responsible to learn and relate the assignment to real life activities.

Overall, the information in this study, provides conclusion that student perceived classroom assessment environment is a measurable construct. The measurement scales used may be a useful tool in helping teachers to identify classroom assessment practices targeted at enhancing student learning. Further validation studies might need to be conducted in other subject areas, with other grade levels, and in other countries.

**REFERENCES**

1. Black, P., & William, D. (1998). Assessment and Classroom Learning. Assessment in Education: Principles, Policy & Practice, 5, 7-74. Retrieved from

<http://doi.org/fpnss4>.

2. Weegar, M. & Pacis, D. (2012). A Comparison of Two Theories of Learning -- Behaviorism and Constructivism as applied to Face-to-Face and Online Learning. Proceedings E-Leader Conference, Manila 2012.
3. Stiggings, R. (2004). New Assessment Beliefs for a New School. *Phi Delta Kappan*, 86, 22-27.
4. Hattie, J.A.C., Brown, G.T.L. (2008) Tensions in educational assessment and measurement in New Zealand: A national reporting engine and conceptions of assessment., *Speaking of Quality: An Educational Psychology Forum*, Auckland , NZ, September 11-12, 2008.
5. Black, P., & William, D. (2005). Lessons from around the world: How policies, politics and cultures constrain and afford assessment practices. *The Curriculum Journal*. 16(2),249-261.
6. Stiggins, R. J., & Conklin, N. F. (1992). *In teachers' hands: Investigating the practices of classroom assessment*. Albany, NY: State University of New York Press.
7. Brookhart, S. M. (1997). A theoretical framework for the role of classroom assessment in motivating student effort and achievement. *Applied Measurement in Education*, 10, 161 – 180.
8. Ames, C. (1992a). Achievement goals and the classroom motivational climate. In D. H. Schunk & J. Meece (Eds.), *Student perceptions in the classroom* (pp. 327 – 348). Hillsdale, NJ: Erlbaum.
9. McMillan, J. H., & Workman, D. J. (1998). *Classroom assessment and grading practices: A review of the literature*. (ERIC Document Reproduction Service No. ED453263).
10. Stiggins, R., & Chappuis, J. (2005). Using student-involved classroom assessment to close achievement gaps. *Theory Into Practice*, 44, 11 – 18.
11. Ames, C. (1992b). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261 – 271.