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Development and Validation of Activity Based Learning Scale among Teachers

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ABSTRACT

Objective: Activity Based Learning (ABL) is a method where students continuously engage in tasks and think about them, helping them understand the teacher's desired outcomes. Classroom management is crucial for creating a conducive learning environment, allowing teachers to control the learning style and direction, preventing disruptions and discomfort. The study aimed to develop an Activity-based learning (ABL) tool related classroom management for teachers in West Bengal, India. It also aimed to determine their views on classroom management scale.

Methods: The study used convenience sampling from larger populations to estimate the number of teachers in various cities. The study involved 100 teachers who were given a self-administered version of a 28-item Activity-based learning (ABL) scale.

Results: After item analysis, the scale had 25 items remaining, covering six broad dimensions: Time Management, Content Complete, Student Interest, Class Control, Child Psychology, Preparation. Secondly The data analysis process included 306 teachers' responses in a second data set for Cronbach alpha. A high degree of statistically significant correlation was found in the scale's final iteration, with Cronbach alpha values of 0.724.

Conclusions: The comprehensive analysis revealed that the Activity-Based Learning (ABL) instrument serves as an effective tool for evaluating classroom management among teachers in the West Bengal region of India.

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Introduction

All teachers face a significant challenge in qualifying competitive and passionate students for the job market, necessitating the search for effective methods to actively engage students in the classroom. Ericksen (1978) believes that "Effective learning in the classroom depends on the teacher's ability to maintain the interest that brings students to the course in the first place". Teachers emphasize understanding delivered knowledge, developing problem-solving skills and critical thinking. Decision makers motivate students to create innovative solutions. Students learn passively by being receptacles of knowledge, while actively participating in the learning process (Younis 2018; English & Kitsantas 2013).

Classroom management is a crucial aspect of teaching, requiring effective control and discipline to create a conducive learning environment (Akar, 2003; Fraenkel & Wallen, 2003). Teachers often express concern about controlling students and maintaining discipline (Raptakis, n.d.; Shin, &Koh, 2007). Despite its direct impact on students' success, managing student behavior and resolving problems remains a stubborn task, particularly in primary schools (Yasar, 2008).Classroom management is crucial in ensuring a conducive learning environment for students. It allows teachers to control the learning style and direction of their classes, preventing disruptions and discomfort(Korkmaz, 2005). A predictable environment, more meaningful academic learning, social and emotional development, a decrease in bad behaviors, and more academic time are all facilitated by effective classroom management(Kratochwill et al., 2009). It also helps prevent distractions and promotes social and emotional growth.

Panko et al. (2007) describe Activity Based Learning (ABL) as a teaching approach in which students actively participate in the learning process throughout. According to Churchill (2003), students and learners benefit from activity-based learning by building mental models for higher-order skills including information transfer and problem-solving. The most effective teaching strategies, according to Bhalli, Sattar, and Asif (2016), entail engaged student engagement in the classroom. According to Bonwell and Eison (1991), students participate in activities and reflect on them as part of activity-based learning. This strategy is a productive and efficient teaching tool since it aids students in understanding the objectives that have been set by the instructor (Kassir 2013).

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Actively based learning is a student-centered instructional approach that offers difficult assignments, interesting activities, and scaffolding to increase effort and motivation. It is also referred to as cooperative learning, collaborative learning, problem-based learning, or inquiry-based learning (Singal et al., 2018; Deci & Ryan 2000). Instead of passively absorbing information, it involves students actively engaged in the learning process through a variety of engaging activities (Quin, 2012).

The goal of activity-based learning is to improve students' literacy and learning participation while strengthening their capacity for self-regulation, including organizing, observing, and assessing. According to Kudryashova et al. (2016) and Loyens et al. (2008), it fosters relationship-building and critical thinking, synthesis, and analysis. Activity-based learning approaches assist students in transitioning from memory and fundamental knowledge to active thinking skills such as analysis, creation, evaluation, and application. Motivation can be boosted by tasks that are connected to observable phenomena. Based on the idea that learning occurs best when activities are involved, activity-based education prioritizes the development of skills over the dissemination of knowledge (Edwards, 2015). Enhancing student skills, incorporating higher-order thinking, completely engaging students, and assisting them in exploring their values and attitudes are some of the key features of activity-based learning (Quin, 2012). The National Council of Educational Research and Training (NCERT, 2011) is in support of it.

The National Knowledge Commission (NKC) recommended in 2009 that social studies instruction that is activity-based aids students in applying their knowledge to real-world challenges. According to studies, pupils who use this method of instruction remember the material for longer than those who don't (Ozen & Ergenekon, 2011). According to a number of studies, it also aids students in reaching their objectives, promotes autonomous learning, and develops higher-order abilities and creative thinking (Shah & Rahat, 2014; Bansal & Kumar, 2012; Choo, 2007). The purpose of the project is to create and evaluate a standardized scale for evaluating instructors' use of activity-based learning in classroom management.

OBJECTIVE OF THE STUDY

The following are the objectives of the current study-

1. To evaluate the Activity-based Learning Scale’s items through item analysis.
2. To validate the Activity-based Learning Scale by evaluating its consistency.

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Material and Methods

Design

"Convenience sampling technique has been used for the collection of relevant data in this study" (Tongco, 2007). It is a Non- Random Technique, the non-random technique involves researchers deciding what needs to be known and seeking individuals who can provide it through knowledge or experience, without requiring underlying theories or participants (Bernard, 2002).

Participants

This study involves selecting proficient individuals or groups knowledgeable about a particular phenomenon, focusing on their as opposed to random studies, availability, willingness to participate, and capacity for clear, expressive, and thoughtful communication of experiences and viewpoints (Cresswell, & Plano, 2011; Bernard, 2002; Spradley, 1979). The researcher administered a draft scale to one hundred (100) West Bengal teachers for item analysis, followed by assessing its internal consistency using Cronbach's alpha method on three hundred Six (306) teachers. The questionnaire was read by the participants before they could submit their answers, and the points were calculated using the correct scale assigned to each statement.

Item pool

The study started with the creation of a conceptual framework, a literature review, the drafting of items and questions, and the consultation of two specialists. Due to participant characteristics, none of the two instruments employed in the study—one created by Martin, Yin, and Baldwin and the other translated into Turkish—showed statistically adequate dependability. The researcher made the decision to create a brand-new activity-based learning classroom management scale(Martin et al., 1998;Savran, &Çakıroglu, 2004; Yerin-Güneri et al., 2004).

Subscale

Activity based learning (ABL) scale related to classroom management was defined as a multi-faceted construct that includes six broad dimensions: Time Management (5 items) Content Complete (3 items), Student Interest (5 items), Class Control (5 items), Child Psychology (5 items), Preparation (5 items) (Samaddar et al., 2023).

Scoring of tools

The present study uses a 5-point Likert scale with 28 questions to represent the Activity-based Learning scale for Classroom Management. The students' answers were noted using a scale from

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1 (strongly disagree) to 5 (strongly agree). According to Mukherjee et al. (2018), the scale has a lowest potential score of 28 (scoring 1 on each of the 28 items) and a maximum possible score of 140 (ranking 5 on each of the 28 items). The scale was developed by the researchers using both positive and negative statements. The score of each item was distributed as 'Strongly Agree' = '5', 'Agree' = '4', 'Neutral' = '3', 'Disagree' = '2' 'Strongly Disagree' = '1'. In unfavorable statements score distributed as- 'Strongly Disagree' = 5, 'Disagree' = 4, 'Neutral' = 3, 'Agree' = 2, 'Strongly Agree' = 1.

Statistics

The study used an item analysis method to identify poor items from the Scale and standardize it with remaining items. Item analysis examines each item's performance independently, using classical statistics like difficulty, discrimination, distractor analysis, and reliability (Bichi, 2015; Thompson, 1985). A t-test item analysis was used to standardize the Activity-based learning associated Classroom Management Scale with good items. To evaluate the scale's reliability, Cronbach's alpha was applied.

Results

The Kelley method, commonly referred to as item analysis, is a technique used to create psychological or educational scales. It aids in locating scale or test items that efficiently differentiate between high and low scorers. If the disparities in scores between members are not taken into consideration, the ideal group size for analyzing test items is 27% from the extremes of the criterion score distribution (Kelley, 1939). In order to maximize the differences in normal distributions and provide enough cases for study, 27% is the value that is used (Karmakar et al., 2021; Wiersma & Jurs, 1990; Hetzel, 1997).

The identification of items that distinguish high and low scorers and ensuring their retention contribute to the overall discriminative strength of the scale are made possible by the Kelley technique, which is essential for item analysis in scale creation (Hetzel, 1997). According to Satyanarayana (2018), the t-test is a dependable statistical method for assessing item discrimination through extreme group means. It may be used to determine if an item discriminates in this fashion as well as the statistical significance of discrimination between high and low scorers.

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Scale validation and improvement can be achieved by combining this approach with the Kelley method (Mitra et al., 2009).

Item Analysis

Table 1. Discriminant coefficients for Subscales

Item	Upper Quadrille			Lower Quadrille			Comparison		
	N	Mean	SD	N	Mean	SD	t	DF	p
ABL1	27	3.37	0.25	27	2.11	0.21	3.80	52	0.000**
ABL2	27	4.62	0.21	27	3.96	0.27	3.81	52	0.000**
ABL 3	27	4.03	0.21	27	3.25	0.25	2.36	52	0.011*
ABL 4	27	4.88	0.06	27	4.48	0.17	2.23	52	0.015*
ABL 5	27	4.77	0.13	27	3.37	0.29	4.306	52	0.000**
ABL 6	27	4.23	0.23	27	4.03	0.22	4.196	52	0.000**
ABL 7	27	4.40	0.22	27	2.48	0.25	9.976	52	0.000**
ABL 8	27	4.92	0.05	27	4.59	0.17	1.789	52	0.039*
ABL 9	27	4.23	0.23	27	4.18	0.23	3.595	52	0.000**
ABL 10	27	4.70	0.13	27	2.22	0.25	8.467	52	0.000**
ABL 11	27	4.20	0.24	27	4.29	0.21	3.315	52	0.001**
ABL 12	27	3.98	0.25	27	4.48	0.21	2.40	52	0.001*
ABL 13	27	4.88	0.06	27	2.85	0.31	6.271	52	0.000**
ABL 14	27	4.88	0.08	27	4.33	0.22	2.083	52	0.012*
ABL 15	27	4.81	0.15	27	4.48	0.14	1.59	52	0.058
ABL 16	27	4.07	0.24	27	2.70	0.26	3.796	52	0.000**
ABL 17	27	4.23	0.25	27	4.55	0.14	3.074	52	0.001**
ABL 18	27	4.92	0.05	27	3.48	0.28	4.999	52	0.000**
ABL 19	27	4.92	0.07	27	4.44	0.22	2.055	52	0.022*
ABL 20	27	4.62	0.12	27	2..27	0.24	6.873	52	0.000**
ABL 21	27	4.96	0.03	27	4.70	0.18	1.385	52	0.086
ABL 22	27	4.22	0.22	27	4.62	0.14	2.595	52	0.006**
ABL 23	27	3.88	0.24	27	2.77	0.29	2.896	52	0.002*
ABL 24	27	4.92	0.05	27	4.03	0.23	3.686	52	0.000**
ABL 25	27	4.77	0.16	27	2.74	0.30	5.864	52	0.000**
ABL 26	27	4.02	0.25	27	4.59	0.18	2.18	52	0.016*
ABL 27	27	4.66	0.13	27	3.07	0.28	5.048	52	0.000**
ABL 28	27	4.85	0.85	27	4.18	0.26	2.371	52	0.010*

** 0.01 level of significance; * 0.05 level of significance

Table 1 demonstrates that two items (ABL15 and ABL21) from the classroom management scale linked to activity-based learning (ABL) do not significantly differ between the highest and lowest

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groups; thus, they were eliminated. Using the 0.05 level of significance, the remaining items (ABL 3, ABL 4, ABL 8, ABL 12, ABL 14, ABL 19, ABL 23, ABL 26 and ABL 28) demonstrate significant differences between the highest and lowest groups, while 19 items have significant variations using the 0.01 level of significance.

Validity

According to Cizek (2012), validity is the degree to which an instrument assesses a trait accurately. The classroom management Scale related to activity-based learning (ABL) underwent expert validation to guarantee face and content validity. A confirmatory stage in evaluating the efficacy of the generated scale when applied to the intended sample is semantic validation (Hair et al., 2019; Ciccehetti& Sparrow, 1981). It incorporates expert and resource perspectives to cut through ambiguity and enhance the language used in statements (Kimberlin & Winterstein, 2008; Ali, 2014). Validity is commonly characterized as the degree to which a measurement instrument genuinely captures the intended data. To verify face and content validity, expert validation was assumed in the case of the Classroom Management Scale related to Activity-based learning (ABL).

Reliability

The study examined 26 items from the Activity based learning scale that covered its five subdimensions. The Cronbach alpha Test for Non-additivity was employed by the researcher to evaluate the internal consistency of the final Activity-based learning (ABL) related classroom management Scale (Kimberlin & Winterstein, 2008). In order to provide an approximation of measurement reliability, the coefficient of internal consistency makes the assumption that items measuring the same construct should correlate (Cronbach, 1951). The alpha (α) correlation between two random samples of items selected from a universe resembling the test items is used to estimate the index of equivalence (Shin & Koh, 2007).

Table 2. Cronbach Alpha of the Activity-based learning Scale (ABLS)

Dimensions	n	Total Item	Mean	SD	Cronbach's Alpha
Time Management	306	4	3.93	0.63	0.308
Content Complete	306	3	4.32	0.61	0.442
Student Interest	306	5	4.39	0.59	0.471
Class Control	306	4	4.35	0.59	0.460
Child Psychology	306	4	4.13	0.57	0.459
Preparation	306	5	4.40	0.54	0.441
ABLS	306	25	4.25	0.39	0.724

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Cronbach's Alpha for the Activity-based Learning Scale (ABLS) is 0.724, according to Table 2, whereas the alpha values for the other dimensions are 0.308, 0.442, 0.471, 0.460, 0.459, and 0.441. For internal consistency and reliability, According to Duzgun&Kirkic (2023; Hinkin, 1995), the analysis's Cronbach Alpha coefficient should be at least 0.60.

Final Scale

The Activity-based Learning Scale has 25 items in six dimensions: Time Management, Content Complete, Student Interest, Class Control, Child Psychology, and Preparation, with distributions shown in Table 3.

Table 3. Final form of Activity-based learning Scale

SI. NO.	DIMENSION	Items	Total Items
1	Time Management	1, 2, 3, 4	4
2	Content Complete	5,6,7	3
3	Student Interest	8, 9, 10, 11, 12	5
4	Class Control	13, 14, 15, 16	4
5	Child Psychology	17, 18, 19,20	4
6	Preparation	21, 22,23, 24, 25	5
Activity-based learning Scale Total Item			25

Discussion

Following the pilot trial, the study employed a 28-item activity-based learning scale for item evaluation. Verma suggested using item DI value instead of difficulty for evaluating quality (Varma, 2008; Emmer &Gerwels, 2005). Two items found no significant difference between the upper and lower groups (ABLS 15 and ABLS 21) were rejected using a 0.05 level of significance 't'-test, while 26 items were accepted using a 0.05 level and 0.01 level of significance 't'-test (Garret, 1984).Later Cronbach’s alpha test is done to verify the reliability which value 0.724. Based on this, one item (ABL 2) is excluded. Statistical analyses have determined that a scale consisting of 6 factors and 25 items is valid, reliable, and usable.

Implication

This study aims to create an Activity-based Learning Scale (ABLS) to evaluate teachers' classroom management levels using Activity-based learning. The ABLS will help educational policymakers develop strategies to improve teacher classroom management performance. For further study the scale will collect data on teachers about classroom management allowing educators to measure the impact of Activity-based learning on their classroom management.

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Conclusion

The Activity-based learning Scale is a reliable and valid measure of classroom management self-efficacy for teachers in West Bengal, India. Its quick administration and ability to reflect on self-efficacy during class can provide valuable insights. However, it could be improved with more challenging items to accurately track self-efficacy over time (Aloe et al., 2014).Activity-based teaching methods effectively impart content knowledge in social studies, motivating students to self-learn and improving performance. Teachers' teaching styles attract students, positively impact their understanding, and ultimately improve academic achievement for better learning results(Sarpong et al., 2020).The instrument was created to evaluate the stressors that educators in a given area encounter, offering a standardized resource for professionals, educators, and legislators to understand classroom management levels, enabling targeted interventions and support networks.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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