



## Development and Validation of Teachers' Classroom Management Questionnaire (TCMQ)

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### ABSTRACT

This research paper aims to outline the development and validation process of the Teachers' Classroom Management Questionnaire (TCMQ), a new psychometric tool designed to measure and evaluate teachers' classroom management skills. The instrument has undergone rigorous testing for its reliability and validity, thus demonstrating its efficacy as an evaluative measure for pedagogical efficacy in classroom management. The preliminary draft of the tool was developed, which consisted of twenty-five (25) items on the five (5) points Likert Scale, which was pilot-tested on three hundred ten (310) public secondary school teachers working in the school education department. Statistical software PLS Smart version 4 was used for the data analysis, validity, reliability, and model fit. CVR of each item was calculated by using the XLStats version 2019. The Teachers' Classroom Management Questionnaire (TCMQ) was developed and validated, exhibiting robust psychometric properties. It may serve as a valuable tool for systematically evaluating classroom management skills in teachers and offers promising avenues for future research and pedagogical interventions. The study findings may help secondary school teachers revisit their classroom management components. This study may open new doors to conduct research for future researchers. The final report elucidates the methodology, findings, and implications for educational research and pedagogical practice. Researchers may use this tool to get data on Classroom Management by using it.

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## 1. Introduction

Effective classroom management is essential for student engagement and educational outcomes. In comparison, considerable research is available on the general principles of classroom management. There is a notable paucity of empirically validated tools that specifically measure teachers' abilities and approaches in managing classrooms. Existing tools often have boundaries such as narrow focus, lack of generality, and insufficient validation. Moreover, many of these tools do not include the multi-dimensional aspects of classroom management, including behavioral, instructional, and emotional components. Therefore, there is a pressing need for a robust, reliable, and valid instrument that can comprehensively evaluate teachers' classroom management skills. The function of effective classroom management in pedagogical success is well-documented in academic literature (Evertson & Weinstein, 2013; Marzano, Marzano, & Pickering, 2003). Previous studies have established its significance in fostering an environment conducive to learning, where behavioral disruptions are minimized, and academic engagement is maximized (Jones & Jones, 2004). Nevertheless, there is a noticeable paucity in the availability of validated instruments tailored to assess classroom management skills in teachers. The lack of a validated tool impedes research and practice. Researchers are inadequate in their

ability to thoroughly assess the efficacy of classroom management strategies, making it challenging to offer evidence-based endorsements for professional development programs.

Through proving the TCMQ's validity and reliability, the study seeks to satisfy strict psychometric requirements stated in the literature (DeVellis & Thorpe, 2021; Nunnally & Bernstein, 1994). Fulfilling these criteria would provide the TCMQ with the empirical stability needed for academic studies and real-world use. The TCMQ is a unique assessment tool that addresses classroom management, filling a gap in educational professionals' available tools. It is not like other instruments like the RTOP Sawada et al. (2002), TSES Tschannen-Moran and Hoy (2001), or CLASS (Pianta, La Paro, & Hamre, 2008). As a result, previous research Hattie (2008); Wubbels, Brekelmans, den Brok, and van Tartwijk (2013) suggests that the validated instrument may be vital in empirical investigations looking at the relationships between good classroom management and academic outcomes. Furthermore, the instrument could inform teacher training and professional development programs, offering a standardized measure for evaluating and improving classroom management skills. The present study establishes its relevance and necessity by articulating this research objective and identifying this gap in the literature. The subsequent sections will delve into the specific methods employed, the statistical analyses conducted, and the interpretive framework used to assess the validity and reliability of the newly developed TCMQ.

In light of these considerations, the primary problem this study seeks to address is the development and empirical validation of a Teachers' Classroom Management Questionnaire (TCMQ) has comprehensiveness in scope, captures multiple dimensions of classroom management, and is subjected to rigorous validation procedures to ensure its reliability and applicability across different educational settings. Although the importance of classroom management is unequivocally recognized, one notable gap in the existing literature is the paucity of validated instruments specifically tailored to measure and assess teachers' classroom management skills. Reformed Teaching Observation Protocol Sawada et al. (2002), Teacher Sense of Efficacy Scale Tschannen-Moran and Hoy (2001), and Classroom Assessment Scoring System Pianta et al. (2008) are a few examples of current tools that concentrate on more general domains of teaching efficacy, instructional quality, or student engagement. These tools may not fully capture the complexity of classroom management as a distinct skill set, even though they provide insightful information about various aspects of teaching and learning. As such, educational establishments frequently depend on subjective observations or broad teaching evaluations, which might not sufficiently address the nuances involved in efficient classroom management.

The objective of the study is to outline the development and validation process of the Teachers' Classroom Management Questionnaire (TCMQ), a new psychometric tool designed to measure and evaluate teachers' classroom management skills. The following research questions are tailored to achieve the objectives of the study.

- R1. To explore the factors of the Teachers' Classroom Management
- R2. To develop the Teachers' Classroom Management Questionnaire
- R3. To validate the Teachers' Classroom Management Questionnaire

The absence of a comprehensive, valid, and reliable measurement tool impeded empirical research and practical application. Commonly, educational institutions depend on personal explanations or broad teaching assessments, which might not sufficiently account for the difficulty of classroom management as a unique set of skills.

## **2. Methodology**

### **2.1. Instrument Development**

The original item pool for the Teachers' Classroom Management Questionnaire TCMQ was created through an detailed literature review and focus groups involving experienced instructors. This tool comprised twenty-five (25) items on the five (5) points Likert Scale in terms of Always (5), Very Often (4), Sometimes (3), Rarely (2), and Never(1). Expert validation is generally taken as an mandatory part in developing a new tool, as it offers critical understandings into the construct validity and theoretical foundations of the tool (Polit & Beck, 2006; Wilson, Pan, & Schumsky, 2012). Thus, expert opinions were incorporated into this study

to validate the Teachers' Classroom Management Questionnaire (TCMQ), adding a layer of reliability and robustness to the instrument.

### 3. Results and Discussion

Expert opinion on the TCMQ serves multiple functions. First, experts in education and psychometrics review the instrument's content validity, ensuring that the questions adequately cover the scope of classroom management as a construct (Lynn, 1986). Second, experts assess the face validity of the instrument, offering insights into the questionnaire items' clarity, readability, and interpretability (Streiner, Norman, & Cairney, 2015). Third, expert reviews facilitate a refinement process where problematic items are revised or eliminated, thereby enhancing the overall quality and integrity of the TCMQ (Haynes, Richard, & Kubany, 1995).

**Table 1: Content Validity Ratio of the items of Teachers' Classroom Management Questionnaire (TCMQ)**

Statement	Sub Area	Item No.	CVR	Cut Value	Status
I change the seating arrangement of the classroom when needed.	Seating arrangement	SA1	0.31	0.31	Retained
I keep the atmosphere alive by proper seating arrangement.		SA2	0.43	0.31	Retained
I prefer a U-shaped classroom seating arrangement.		SA3	0.31	0.31	Retained
I keep a sympathetic attitude in the classroom, resulting in a better learning atmosphere.	Student Teacher Relationship	STR1	0.43	0.31	Retained
I keep a caring attitude towards students, which makes classroom management more effective.		STR2	0.43	0.31	Retained
I help students with their problems.		STR3	0.31	0.31	Retained
My punctuality in the classroom results in daily task completion.	Time Management	TM1	0.37	0.31	Retained
My time management results in good classroom learning outcomes.		TM2	0.43	0.31	Retained
I start and end the class on time, making the teaching-learning process of the class a successful		TM3	0.43	0.31	Retained
I make teaching and management effective with the proper use of the writing board.	Use of Writing Board	UWB1	0.43	0.31	Retained
I engage the students through the proper use of the writing board.		UWB2	0.37	0.31	Retained
Proper use of the writing board always keeps students focused on the class lecture.		UWB3	0.37	0.31	Retained
I make classroom management better by setting practicable norms.	Classroom Norms	CN1	0.43	0.31	Retained
I manage that all students reach class on time.		CN2	0.37	0.31	Retained
I set norms that result in classroom discipline.		CN3	0.37	0.31	Retained
I keep a reasonable voice pitch for better communication in class.	Conducive Environment	CE1	0.43	0.31	Retained
I use exciting strategies to make the learning environment congenial.		CE2	0.37	0.31	Retained
I keep in touch with students' problems to establish rapport.		CE3	0.37	0.31	Retained
I provide a conducive environment for the students.	Appropriate Instructional Techniques	CE4	0.31	0.31	Retained
I write lesson plans beforehand since it gives me confidence in teaching and management.		AIT1	0.43	0.31	Retained
During instruction, I float questions for brainstorming		AIT2	0.31	0.31	Retained
I enter the classroom fully equipped with the needed resources.	Feedback	AIT3	0.43	0.31	Retained
I believe that positive feedback results in positive outcomes.		FB1	0.37	0.31	Retained
I encourage students' participation through proper feedback.		FB2	0.37	0.31	Retained
I make students focused in the class through feedback.		FB3	0.37	0.31	Retained

Further, consulting experts also serve to triangulate the findings from empirical validation processes such as factor analysis and reliability testing. Statistical robustness and expert validation would likely result in a more comprehensive and trustworthy instrument, thereby increasing its utility for academic research and practical applications in educational settings (Creswell & Creswell, 2017). Considering the above-cited facts, expert opinion was sought and pilot-tested on three hundred ten (310) secondary school teachers working in the school education department. All the Participants were selected from the public sector.

The questionnaire was administered online, through Google Sheets, and in person, depending on the participant's preference. The tool was reviewed by thirty-five (35) experts who spanned best classroom managers, item developers, and heads of institutions across the gender and local, national, and international. Based on data analysis of the expert opinion, the items with a lower CVR of less than 0.31 needed to be dropped from the tool. However, none of the items was dropped, retaining behind all the items. All the twenty-five (25) retained items were further pilot tested on three hundred ten (310) public secondary school teachers working in the school education department since Ramzan and Khurram (2023) reported that ten to fifteen respondents are mandatory on each item of the instrument being pilot tested. Sattar, Khurram, and Asif (2023) reported that PLS Smart version 4 is a reliable tool. Therefore, the data analysis of the items of the tool gained by pilot testing was completed using PLS Smart version 4.

**3.1. Validity of the Questionnaire TCMQ**

Sattar et al. (2023) reported two critical tests to ensure the validity of a construct: Convergent Validity and Discriminant Validity. They emphasize that testing is the route to establishing Construct Validity. Convergent Validity, in particular, is assessed using loading factors that measure how well each item correlates with its construct.

**Table 2: Factor Loading Values of the Questionnaire TCMQ**

	AIT	CE	CN	FB	SA	STR	TM	UWB
AIT1	0.571							
AIT2	0.897							
AIT3	0.896							
CE1		0.762						
CE2		0.784						
CE3		0.830						
CE4		0.791						
CN1			0.790					
CN2			0.930					
CN3			0.936					
FB1				0.591				
FB2				0.648				
FB3				0.835				
SA1					0.894			
SA2					0.892			
SA3					0.882			
STR1						0.865		
STR2						0.842		
STR3						0.698		
TM1							0.845	
TM2							0.815	
TM3							0.750	
UWB1								0.935
UWB2								0.937
UWB3								0.858

Table 02 indicates the relationship between specific items and their associated latent constructs. The ideal scenario is for each item's loading factor—a statistical measure of how well the item correlates with its underlying construct—to be 0.7 or higher. If any item's loading factor falls below this benchmark, its relevance to the construct may be called into question and should be reviewed. Therefore, the items titled AIT1, FB1, FB2, and STR3 with factor loading values less than 0.7 were dropped. Moreover, the model was retested by PLS Smart version 4, resulting in all the loading values exceeding the criterion value of 0.7.

**Table 3: Revised Factor Loading Values of the Questionnaire TCMQ**

Items/Factors	AIT	CE	CN	FB3	SA	STR	TM	UWB
AIT2	0.945							
AIT3	0.937							
CE1		0.757						
CE2		0.793						
CE3		0.822						
CE4		0.794						
CN1			0.793					
CN2			0.929					
CN3			0.935					
FB3				1.000				
SA1					0.894			
SA2					0.893			
SA3					0.881			
STR1						0.922		
STR2						0.912		
TM1							0.839	
TM2							0.811	
TM3							0.759	
UWB1								0.936
UWB2								0.937
UWB3								0.857

Table-03 provides empirical support for the construct. Specifically, it shows that the loading factors for these constructs exceed the minimum recommended value of 0.7, indicating a strong relationship between the items and their constructs.

### 3.2. Internal Consistency Reliability, Convergent Validity, and Discriminant Validity

The Composite Reliability (CR) values indicate internal consistency reliability for each construct. In the case of the construct, the CR value remained notably more incredible than the accepted threshold of 0.7. Convergent validity is assessed through each construct's Average Variance Extracted (AVE). The minimum accepted AVE value is typically set at 0.5. In this study, the AVE was greater than the 0.5 benchmark. The Fornell-Larcker Criterion determines the Discriminant validity. According to the Fornell-Larcker Criterion, the square root of the AVE for each construct should exceed its highest correlation with any other construct. Only the value against the factor "Feedback" remained below the criterion; weak items were removed from the preliminary tool. The revised Table indicates that all the values in terms of Cronbach's alpha, Composite reliability ( $\rho_a$ ), Composite reliability ( $\rho_c$ ), and Average variance extracted (AVE) exceed the criterion value. However, the last factor, "Feedback," had to be removed from the tool.

**Table 4: Cronbach's Alpha, rho\_A, Composite Reliability, and AVE of TCMQ**

Latent Variables	Cronbach's alpha	Composite reliability ( $\rho_a$ )	Composite reliability ( $\rho_c$ )	Average variance extracted (AVE)
Seating arrangement	0.868	0.870	0.919	0.791
Student Teacher Relationship	0.811	0.813	0.914	0.841
Time Management	0.727	0.732	0.845	0.646
Use of Writing Board	0.896	0.896	0.936	0.830
Classroom Norms	0.862	0.866	0.917	0.788
Conducive Environment	0.802	0.805	0.870	0.627
Appropriate Instructional Techniques	0.870	0.873	0.939	0.885

**Table 5: Model Fit Summary of TCMQ**

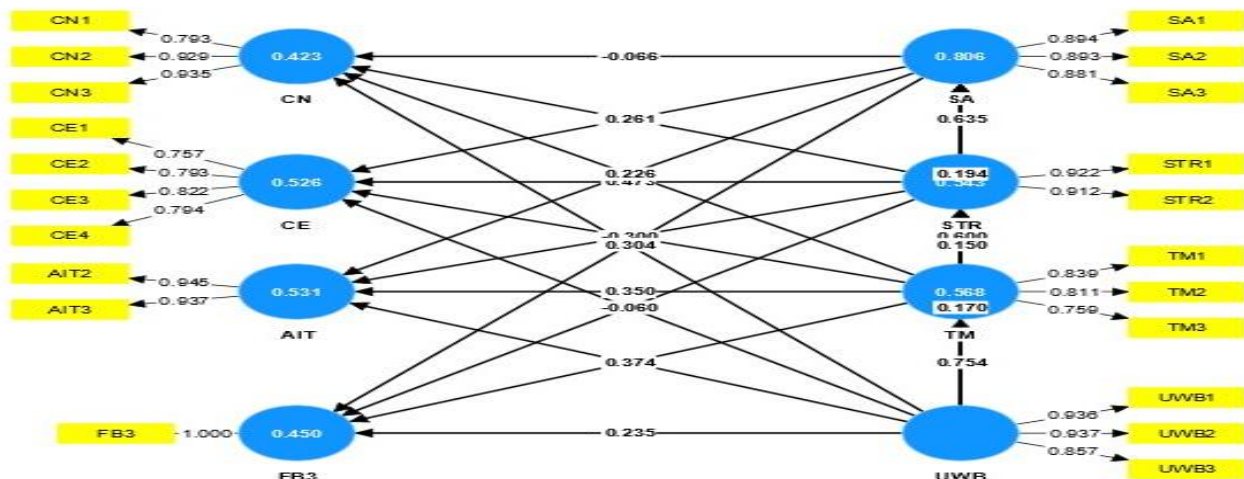
	Saturated model	Estimated model
SRMR	0.079	0.078
d_ULS	2.421	2.198
d_G	1.018	1.163
Chi-square	554.145	506.259
NFI	0.910	0.906

Table 05 elucidates various fit indices to assess the Teachers' Management Questionnaire (TMQ) model fit, juxtaposing the saturated and estimated models. These fit indices include the

Standardized Root Mean Square Residual (SRMR), d\_ULS (Unweighted Least Squares Discrepancy), d\_G (Geodesic Distance), Chi-square, and the Normed Fit Index (NFI). The SRMR values for both the saturated and estimated models are below the generally accepted threshold of 0.08, with the saturated model registering an SRMR of 0.079 and the estimated model showing an SRMR of 0.078, possessing a satisfactory fit. Similarly, the d\_ULS values (2.421 and 2.198) for the Saturated model and Estimated model differ, signifying that the estimated model is a superior fit than the saturated model. Further, the d\_G values also differ for the Saturated and Estimated models, with 1.018 and 1.163, respectively. In the case of d\_G, lower values are customarily taken as better, indicating that the saturated model might be a more satisfactory fit.

Regarding the Chi-square index, the estimated model shows a lower value (506.259) than the saturated model (554.145). Lower Chi-square values indicate a better fit, lending empirical support to the notion that the estimated model may be preferable. Lastly, the NFI values are similar for both models, with 0.910 for the saturated model and 0.906 for the estimated model. Since both values are above the generally accepted threshold of 0.9, they suggest that both models offer an acceptable fit for the NFI index. In summary, nuanced distinctions are observed while both models offer a generally acceptable fit across multiple indices. Specifically, the estimated model shows advantages regarding SRMR, d\_ULS, and Chi-square, whereas the saturated model fares better regarding d\_G. The NFI values for both models are relatively similar, meeting the established criteria for a good fit. Therefore, the choice between the saturated and estimated models would be contingent upon the specific research objectives and the relative importance accorded to each fit index.

**Figure 1: Outputs of the construct Model Test of the items of Teachers' Classroom Management Questionnaire (TCMQ)**



#### 4. Conclusion and Policy Recommendations

The Teachers' Classroom Management Questionnaire (TCMQ) has been successfully developed and validated, exhibiting robust psychometric properties. It serves as a valuable tool for systematically evaluating classroom management skills in teachers and offers promising avenues for future research and pedagogical interventions. Researchers may use this tool to get data on Classroom Management by using it.

##### 4.1. Summary and Theoretical Implications

The present study successfully developed and validated the Teachers' Classroom Management Questionnaire (TCMQ), a psychometrically robust instrument. The TCMQ demonstrated internal solid consistency convergent and discriminant validity, substantiating its empirical utility. Theoretically, this research contributes to the literature by providing a multi-dimensional tool capable of capturing the complexity of classroom management, thus advancing the understanding of this critical aspect of education. For practitioners, the TCMQ serves as a viable mechanism for self-assessment and improvement, potentially elevating educational quality. Educational administrators can also use the TCMQ for performance evaluations, informing targeted professional development initiatives. Given the TCMQ's validity, educational institutions should integrate it into teacher training programs. Policymakers should consider the

TCMQ as a potential standardized assessment tool for teachers' performance evaluations. The instrument can inform educational policy by identifying areas in classroom management that need attention and resource allocation. The TCMQ's comprehensiveness makes it suitable for international educational assessments, providing a common standard of classroom management practices. The TCMQ is a significant advancement in educational research and practice, offering empirical rigor to a field often characterized by subjective evaluation. Its incorporation into educational policy and practice promises to enhance the efficacy of classroom management strategies, ultimately improving educational outcomes. Keeping on the above-cited data analysis, model fit results, and recommendations, the weak items have been deleted from the Final Version of Teachers' Classroom Management Questionnaire (TCMQ), in which STR3, ATI1, FB1, and FB2 have been deleted.

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**Table 6: Final Version of Teachers' Classroom Management Questionnaire (TCMQ)**

<b>Statement</b>	<b>Item No.</b>
I change the seating arrangement of the classroom when needed.	SA1
I keep the atmosphere alive by proper seating arrangement.	SA2
I prefer a U-shaped classroom seating arrangement.	SA3
I keep a sympathetic attitude in the classroom, resulting in a better learning atmosphere.	STR1
I keep a caring attitude towards students, which makes classroom management more effective.	STR2
My punctuality in the classroom results in daily task completion.	TM1
My time management results in good classroom learning outcomes.	TM2
I start and end the class on time, making the teaching-learning process of the class a successful	TM3
I make teaching and management effective with the proper use of the writing board.	UWB1
I engage the students through the proper use of the writing board.	UWB2
Proper use of the writing board always keeps students focused on the class lecture.	UWB3
I make classroom management better by setting practicable norms.	CN1
I manage that all students reach class on time.	CN2
I set norms that result in classroom discipline.	CN3
I keep a reasonable voice pitch for better communication in class.	CE1
I use exciting strategies to make the learning environment congenial.	CE2
I keep in touch with students` problems to establish rapport.	CE3
I provide a conducive environment for the students.	CE4
During instruction, I float questions for brain-storming	AIT2
I enter the classroom fully equipped with the needed resources.	AIT3
I make students focused in the class through feedback.	FB3