Measuring Classroom-Based Leadership Competence for Quality Instructional Delivery in Nigeria Public Secondary Schools

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Abstract

As the race towards maintaining academic credibility regarding students' learning outcomes and attaining 21st century competencies in teachers becomes a priority in our society, leadership has become a noteworthy concept in educational literature. More significantly, quality instructional delivery has received significant attention in recent times due to the need to further strengthen teacher leadership capability. This study validates a theory-based leadership framework of teachers towards quality instructional delivery of lessons in Nigerian secondary schools using quantitative research of the survey from a targeted population of 53,520 teachers out of which 500 teachers in the North-Central and South Eastern States Junior Secondary Schools, Nigeria were selected using proportionate sampling technique. The internal consistency of the questionnaire used has a coefficient index of .84 alpha value, which indicates that the instrument is reliable. Research questions raised were analyzed using Structural Equation Modeling to validate the constructs and results reveal a significant effect of leadership competence on quality instructional delivery in Nigerian schools.

Keywords: *Classroom-based Leadership Competence, Quality Instructional Delivery*

1. Introduction

The world is going through social, cultural, economic, and technological changes that have influenced every sphere of life with no exception. These rapid changes in society particularly in the education sector have prompted practitioners and stakeholders to examine carefully, what it means to be a competent teacher. With the growing trend in society, teachers need to be capable practitioners and demonstrate the skills required to function efficiently and effectively within the complex education system. Information in recent times has revealed a crisis in educational leadership today as revealed in unethical and immoral episodes suggesting value-oriented practices in our schools (Yekin,

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2024; Oduol, 2021). Undoubtedly, teachers play a significant role in this regard, particularly in the classroom where teaching and learning activities occur. Teachers do not only coordinate learners' activities in the classroom but can positively influence them to strive with maximum enthusiasm in the course of knowledge acquisition for maximum achievement in their studies and beyond.

Studies (Dantley, 2010; Leithwood & Schumacker, 2020) agreed that leadership is a key component of successful school improvement and reform, as the success or failure of policy implementation at the school level has a lot to do with the quality and type of leadership. A teacher's actions can be judged by the extent to which he/she contributes to the relevant competencies that guide the learners' behavioural and performance goals; which will in turn affect the overall achievement of the school goals. Without the guidance of a teacher in the classroom, the process can be best described as a scene of chaos and confusion. When a teacher demonstrates good leadership competence in class, the teaching-learning process will be progressive. Hence, to build a strong commitment of students towards the realization of their academic and personal goals, the teacher must demonstrate good leadership competencies in the discharge of responsibilities in the classroom and beyond.

Fundamentally, leadership responsibilities of teachers in school is on instructional delivery, that is, most teachers are trained on how well to teach facts and skills with concern about how much students learn. Little or no consideration is given to students in discussing rights and wrong, fairness and justice, values, and moral responsibilities. According to Uzok and Njoku (2015), school enhances student moral behavior to provide them with a sense of belonging to a group that is responsive to their individual needs. In this regard, the teacher plays a critical leadership role in the school by listening closely to understand a student's reasoning, to help the student to the next level of reasoning. It is important to reiterate that some factors have been attributed by education practitioners to be responsible for ineffectiveness in school. Enu and Esu (2011) state that, there are some ethical crises in the country, Nigeria as manifested in the exhibition of negative attitudes like indiscipline, poor attitude to work, lack of respect for law and order, and cheating among others. With special reference to education, the lack of moral integrity exemplified by some teachers and students in examination malpractices, obscene mode of dressing and certificate forgery among others is a call for concern.

Amazingly, schools have derailed in the provision of good leadership expected as evidenced by the tremendous deterioration of moral, social, and educational values among students (Njoku, 2016; Omede & Omede, 2015; Ofoegbu, Clark & Osagie, 2013). Emphasis is placed more on academic

achievements while questions on what we ought to be educating our students to reflect value-oriented leadership has missed the mark. This is evident in the moral decadence and juvenile delinquency exhibited among secondary school leavers in Nigeria which has been traced to a lack of provision of good leadership on the part of school teachers as more focus is been placed on teaching and learning while other non-cognitive aspects were been neglected by the teachers (Lawal, 2022). Hence, teachers need to bring their conceptual and practical knowledge together by carefully identifying routines that do not help and in contrast, contribute to constraint in children, which in turn inhibit the learning of those whom they teach and lead. Thus, this is where leadership comes into play.

Fundamentally, the perspective offered on teacher leadership competence is grounded in the Status Characteristics Theory (SCT) developed by Berger, Cohen and Zelditch, (1972). This section of the article discussed the relevance of SCT to teacher leadership competence as a focus for research and practice in the global education context. SCT is found suitable for this study since the theory offers distinct perspectives on the social influence of a person's ability over others with shared group membership. Individuals of high social status like teachers are often swayed in a wide array of social situations due to society's expectations of them. People expect them to be competent at a variety of tasks without considering underlying issues. Drawing on this idea, status characteristics generate general and specific expectations of competence on its relevance to a particular task and set out precise pathways of relevance through which any given status characteristic can be linked to any given task ability (Berger et al., 1972; Foddy & Riches, 2000).

According to the theory, members' participation and social influence in task are functions of the expectations they hold for themselves and others about their relative ability at the task (Berger, Wagner, & Zelditch 1985; Humphreys & Berger 1981); hence, expectations of competence are generated at the outset of interaction through comparisons between group members in terms of status characteristics. Humphreys and Berger (1981); Webster and Foschi (1988) posit that status characteristic is any characteristic that is evaluated differentially in the broader society and is associated with either specific or general expectations of competence. However, in all studies, it could be said that there is no best or universally accepted approach to teacher leadership competency.

Nevertheless, there are growing array of challenges in Nigeria beyond the school some of which are centered around personal, professional, organizational, communication, and societal issues which are considered obstacles to personal growth, academic success, and school effectiveness. Yet, inadequacies in leadership are often presented as a formative cause of these same

problems. Mansoor (2015) and Akhtar (2015) in their study revealed that even though school administrators tend to accept the roles of teacher leaders, there are some challenges against teacher leadership development especially in public schools. In the past two decades, the practice of teacher leadership has gained huge importance as teachers perform more leadership activities, especially in the classroom during instruction delivery. This is evident in the daily exchange between teachers and students during classroom instructional practices. Leithwood et al. (2004) reveal that, teachers' leadership competency when compared to other factors like services and facilities, has the greatest influence on students' motivation and achievement.

As the main business of the school focuses on teaching and learning, leadership that supports teaching and learning will be salient. A true measure of leadership for learning in school will highly depend on the effectiveness of leadership in the classroom; hence, leading change from the classroom has been linked with the development of teacher leaders (Beram et al., 2023). In general terms, teacher leaders, therefore, need to understand exactly what they are leading and communicate their intentions for teacher leadership, while actively building connections, coherence, and alignment across teacher leadership behaviour throughout the classroom (Fullan, 2010). The paradigm shift in teacher leadership requires teachers to demonstrate leadership roles in the classroom. As leaders in the classroom, teachers need to know how learning takes place, and the appropriate levels of intellectual, physical, social, and emotional development of their students (Yuet, et. al, 2014). Therefore, the purpose of this study is to initiate the process of bringing forth both clarity and attention surrounding teacher leadership competencies. Thus, this study aims to understand both the theory and practice of teacher leadership competencies to develop a quantitative measure of teacher leadership in Nigerian secondary schools. Specifically, it examines the concept of teacher leadership competence that informs quality instructional delivery in Nigerian secondary schools likewise the dimensionality of teacher leadership competencies among secondary school teachers in Nigeria.

1.1 Objective of Study

Objectives of this study included to;

1. establish the construct validity for teacher leadership competence in Nigeria secondary schools.
2. identify the dimensions of leadership competence (analytic, personal, communication, positional, and organizational) that have a significant effect on quality instructional delivery in Nigerian secondary schools.

2. Literature Review

Research studies on teacher leadership which is central to educational effectiveness are fast evolving in recent years. The concept of leadership covers several activities and behaviors that Salleh (2018) classified as intelligence, problem-solving, emotional stability, and openness to experience. Studies (Harvey & Jones, 2022; Antonakis et al., 2012) support that there is a paradigm shift in leadership practices from a focal point of creating constant progress through determination towards a greater concern for positive leader-follower relations and a focus on the needs of the people. This change in the concept of leadership is thought to manifest itself in both the skills required to adapt and the competencies needed to adjust to a changing, more skeptical, and faster-moving society (Esser et al., 2018).

Meanwhile, over the years, there has been an increasing demand to identify the appropriate competencies that leaders should have, even though, the competencies that have sufficed in the past are likely to have undergone significant changes (Jones & Gosling, 2015; Antonakis et al., 2012). At present, research studies express different perceptions of leadership competency in education. According to Radda et al. (2015), competencies are behaviors focusing on the personal attributes of an individual that are important to his effectiveness and performance at work. Competencies are raw ingredients needed for effective leadership and categorize the model into two types. The first one describes what leaders do on the job to get results while the other describes the knowledge, skills, traits, and motives that leaders bring to the job that enable them to carry out their duties.

Figure 1

Leadership Competencies Framework

Analytic Competencies	Personal Competencies	Communication Competencies	Positional Competencies	Organizational Competencies
Self-Assessment	Character, Personal Values, & Ethics	Credibility & Charisma	Education	Vision-Setting
Problem Definition	Cognitive Ability & Creativity	Influence & Persuasion	Experience	Management & Supervision
Stakeholder Analysis	Enthusiasm	Interpersonal & Group Orientation	Expertise	Information & Knowledge Management
Systems/Organizational Analysis	High Standards	Listening, Attention, Question-Asking, & Learning	Knowledge of Sector	Technological Capability
Analysis of Technology to Support Leadership	Personal Conviction & Persistence	Public Speaking, Presentation Skills, Debate, & Discussion	Knowledge of Organization	Empowerment & Supportiveness
Problem Solving	Self-Discipline & Self-Confidence	Diversity & Intercultural Orientation	Familiarity with Task Type	Teaching & Coaching
Review & Analysis of Results	Tolerance for Uncertainty & Risk-Taking	Role Modeling	Language & Vocabulary	Facilitation & Negotiation

(Source: Ruben, 2019)

Competencies frameworks are understood as the tools that set out behaviors required of individuals working in an organization to facilitate a shared vision toward goal achievement. This study focuses on the competency framework formulated by Ruben (2019) for leaders who found themselves overwhelmed with the complexities of an organization to reflect and provide a common approach that is relevant to contemporary issues, working efficiently and raising standards to improve organizational effectiveness with particular goals about understanding and enhancing their efficacy in personal, professional, social, or community settings. Research studies (Seidel & Sturmer, 2014; Pioger, et. al, 2020) have also established knowledge as a key component of teacher professional competence; thus, quality pedagogical and content knowledge are determining factors for the successful analysis of teaching based on goal orientation, learning assistance and positive learning atmosphere. In a study that sought to understand the importance of pedagogical and content knowledge to reach an adequate analysis of Mathematical Knowledge for Teaching (MKT), teachers with comprehensive content knowledge achieve more in analyzing teaching scenarios and generating alternative teaching strategies when compared with teachers with low content knowledge (Kresting et al., 2012). Hence, teachers should be able to analyze and implement important and necessary changes in their workplaces to increase their professional self-efficacy and empower them to carry out their work effectively.

Fundamentally, knowledge, skills, experiences, and personal attributes guide the professional behavior of a teacher in the course of discharging his/her responsibilities; as he/she appears to be the person who is relatively and strategically placed in a position to perform effective guidance for students in the school. However, for a teacher to be able to discharge the teaching duty professionally, it is required to have personal competence following an ethical code of conduct. Therefore, the personal competencies of a teacher include having good insight, being complacent, having resilience, creativity, composure, and humor, being enthusiastic and energetic, self-satisfied, and being open-minded to make better bonding with others. Siddiqui et al. (2021) perceive competencies as underlying characteristics of a person that may be motive, trait, skill, aspect of one's self-image or social role, or a body of knowledge which a teacher uses that is concerned with the behavioral and personal attributes that are significant to his/her performance at work.

Researchers agreed that the communication competence of teachers comprises knowledge, behavior, skills, motivation, and attitudes that are required of a teacher in the course of instructional delivery in the classroom (Bakic-Tomic et. al, 2015). The teacher can adapt the message into interaction in a context that

promotes mutual understanding while feedback is used as information about the (non) successful adaptation. Hence, a teacher as a communicator in the classroom must be motivated to engage all students based on the goals and the value it brings to them. A study was undertaken by Sutherland and Yushida (2015) to determine the extent to which teachers' perceptions of communication competence are related to their levels of trust in their school leaders, and whether these relationships are influenced by the frequency of communication between the teachers and their leaders. The result discloses that communication competence identifies specific leader communication behaviors that relate to trust.

As one of the most important competencies required of a good teacher in discharging responsibilities in classrooms, professional skill in terms of knowledge acquired is one of the foundations of a successful teaching and learning process. Our school climate comprising the school leaders' position with school culture, the relationship with teachers and students, and the support from parents and community all contribute to the quality of leadership in school. However, by teacher position, he/she should demonstrate his viability and proper solutions for school improvement. Khutorskoy (2013) offers a classification of competencies based on professional training in compliance with the requirements of employers and a set of relevant skills while teacher leadership according to Smulyan (2016) is composed of beliefs, attitudes, and values about teaching, learning, and leadership. Drawing on these, the position of teacher requires cognitive capabilities based on the demand, complexity, problem-solving and some inherently unpredictable tasks with are crucial in determining the quality of the teaching profession.

Table 1

Categorization and Operational Definition of Constructs

Construct	Categorization	Items	Operational Definition
Teacher Leadership Competence	Analytical	7	Teacher's ability to clearly and critically assess, define, classify, analyse and evaluate relevant tasks towards problem solving in the classroom.
	Personal	7	Inspire students through strong emotional stability, character, values, ethics and develop positive relationships with them by showing care understanding, concern and friendly attitudes.
	Communication	7	Practice active listening; gather relevant information to communicate correctly and appropriately using confident speaking voice, eye contact or gestures that will reinforce learning, improve classroom communication and help accomplish instructional objectives.
	Positional	7	Having pedagogical knowledge and in-depth

			understanding of subject matter with some creative classroom management strategies that supports teaching and learning.
	Organizational	7	Create room to facilitate activity based-learning through collaboration, teamwork, assigned tasks and responsibilities within and beyond the classroom.
Quality Instructional Delivery	Comprehension, stimulation, explication and Feedback	7	The extent to which teacher explains difficult task to students' understanding, creates opportunity for students to ask questions and give remarks on a subject matter, stimulates students' interest and reinforce them to learn and acknowledge their good deeds.

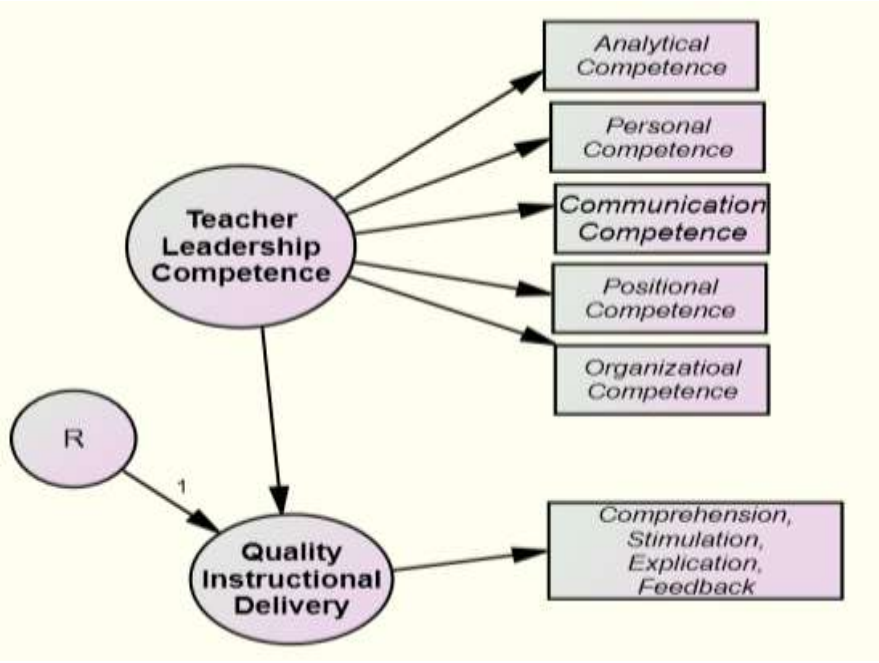
In this context, the school as an organization should be concerned with how to involve personnel in school change initiatives, and how to better assist the school head in the course of school administration and utilizing relevant data in decision-making (Norazlinda Saad & Surendran Sankaran, 2013). Leaders needed to participate in the core work of the administration competently, hence, teachers should have the competency to assist their principals or colleagues in utilizing multiple assessment tools that are aligned with state and local standards, particularly in the school change process. In this regard, it can be concluded that the school administration should focus on getting teacher leaders to be the front-line personnel, who share responsibilities with school administrators to run the schools and guide other colleagues toward achieving the school's vision.

Similarly, the importance of teacher effectiveness in the realization of educational objectives cannot be overemphasized as it is a significant factor in raising the academic standard of any school. The concept of effectiveness which encompasses students' academic achievements and the personality development of students and teachers has been a major concern to educational practitioners and policymakers. Effectiveness is the extent to which the set goals or objectives of the school programme are actualized. The perimeters for measuring the effectiveness of secondary school varies and may include the level of discipline, tone of the school, school climate, teacher performance, and the number of students who successfully pass their school leaving certificate examinations (Cohen, McCabe, Michelli & Pickeral, 2009; Iyer, 2011). Recent research findings (UNESCO, 2000; Awwalu & Yusof, 2012) on secondary education in Nigeria have shown that there is an enduring deterioration in the quality and efficiency of secondary school education delivery in Nigeria. As a result, effectiveness is not achieved as evidenced in the downward trend of students' performance in external examinations over the years (Nigerian Education Sector Analysis, 2007). An effective teacher is a change agent in the lives of students whose lifestyle should teach morals, hence, teachers should not only be concerned about imparting knowledge but also shaping characters and moulding

lives (Aina et al., 2015). The effectiveness of a teacher is therefore needed to stimulate learners' interest from the beginning of the lesson and to determine the student's level of assimilation on a particular subject matter.

Figure 2

Teacher Leadership Competence and Quality Instructional Delivery Model



3. Research Methodology

3.1 Research Design

The research design for this study is a quantitative study of the survey type that is aimed at getting valuable information/data for the research. The design is adjudged appropriate for the study because it enables the researcher to collect and analyze data from respondents who were considered to be representative of the entire study population specifically in Nigeria secondary schools.

3.2 Population, Sample and Sampling Technique

The population for this study therefore comprised 228,487 teachers who have been teaching in public junior secondary schools across the six geo-political zones in Nigeria, while the target population was 53,520 qualified and experienced teachers in the North-Central and Southeast States Junior Secondary

Schools in Nigeria. This becomes necessary because qualified and experienced teaching staff in the school system are the bedrock for sustaining quality instructional delivery in the classroom. Specifically, a State-by-State analysis of personnel conducted by UBEC (2019) found that States in the North Central and South Eastern Zones have a higher percentage of qualified teachers in ranking than others. In determining the sample size, Yamane's (1967) formula for finite population suggests 399 teachers to be used as a sample for the study. This is revealed in the workings as indicated below:

$$n = \frac{N}{K + N(e)^{\wedge}2}.$$

$$n = \frac{228487}{1 + 228487(0.05)^{\wedge}2}.$$

$$n = \frac{228487}{1 + 228487(0.0025000000000000005)}.$$

$$n = \frac{228487}{1 + 571.2175000000001}.$$

$$n = \frac{228487}{572.2175000000001}.$$

n = 399.30

(where: N- Population of the study, K- Constant (1), e- Degree of error, n- Sample size)

However, a sample size of 500 was used for the study to enable the researcher to cover for the poor rate of return, biased and uncompleted filling of the questionnaire anticipated and experienced during the pilot study. Hence, 500 questionnaires were distributed among teachers across junior secondary schools in two zones (North Central and Southeast Zones) using proportionate sampling techniques. Across all participating schools in Nigeria, an average of four participants with minimum qualification of Nigeria Certificate in Education (NCE) and years of teaching experience were contacted to complete the survey.

3.3 Instrumentation

The survey was developed in stages. The instrument used for the collection of data was a Teacher Leadership Competence Survey (TLCS) and Quality Instructional Delivery Questionnaire (QIDQ) structured on a 4-point

Likert scale of Consistently, Usually, Occasionally, and Rarely. All of the important leadership capabilities expected of teachers as discussed in the literature review were examined and incorporated in the questionnaire. Initially, the construction of the questionnaire incorporated two already established instruments adopted from the Teacher Leadership Survey (Ozdemir, Karademz & Turan, 2021) and the Teacher Leadership Inventory (Tsai, 2015, Leadership Competence Instrument, 2017). The instruments were examined for their face and content validity by the four experts in research and evaluation, all of whom are researchers in Nigerian universities.

3.4 Data Collection

For pilot testing, 50 copies of the instrument were administered at the initial stage of this study using a google form link shared through the private school teachers' various online platforms to reach out to them. However, not all question items were attended to during the pilot study as some participants left a few items unticked before submission, leaving the researcher with the option to remove uncompleted items from the survey. The data were subjected to a test to establish the internal consistency of the instrument, The Cronbach alpha reliability method was adopted with a coefficient index of .84 which adjudged the instrument reliable and suitable for use through the pilot study.

Thereafter, questionnaires were distributed to participants by hand and collected on the spot with the help of other research assistants drawn from the two geopolitical zones. The administration and retrieval yielded 81.2% result, which according to Kerlinger (1970) is considered a satisfactory rate of return. Hence, 406 questionnaires retrieved were completed upon return, sorted, coded, and analysed using Statistical Package for Social Sciences (SPSS) and Structural equation modeling (SEM) to test for the construct validity of variables. This is considered suitable because SEM takes a confirmatory approach to data analysis and can be used to examine a series of dependence relationships or effects simultaneously. At first, it was used to validate the constructs of the variables under observation after which an estimation and test of variables were ascertained.

4. Data Analysis And Interpretation

Based on the nature of this study, it is essential to identify the factors loading for the variables of teacher leadership competence to be able to determine the components to be removed and ensure that the data are well transformed and simplified since the aim of the factor analysis is to reduce the dimensions of data in the study and recognize the variables with high influence. This section therefore examined the construct validity of the Teacher Leadership

Competence Scale as used to gather information from 406 secondary school teachers in North Central and South-Eastern geo-political zones in Nigeria.

4.1 Construct Validity for Teacher Leadership Competence

At the initial stage of this analysis, there were forty-two question items generated and assigned to five clusters of TLS and QID based on conceptualization. Exploratory Factor Analysis (EFA) was included in the analysis phase and conducted on all forty-two items. The EFA was performed on SPSS 22 using the Principal Axis Factoring (PAF) technique with factor extraction to test the underlying factors and ascertain the appropriateness of factors and items as proposed in this study. The purpose of this is to reduce item loading which is less than .40; the decision to eliminate such items from the scale was affirmed using guidelines of statistical significance for interpreting factor loadings (Stevens, 2002). More specifically, not all items contribute to the consistency of a scale, which is why factor analysis is required to eliminate items with low factor loading and an unrealistic number of factors. To achieve this, PAF with Varimax Rotation, Barlett's tests of Sphericity and Kaiser-Meyer-Olkin measure was performed on all items in the instrument using duly completed data retrieved from the participants from sampled schools. In line with this process, the factor loading value of each item was examined. Items AN_7, PR_6, and CM_6, with load values below .40 were expunged from the scale. This was suggested by Stephen (2002) that the value of a factor loading should be greater than 0.40 for interpretation purposes while two items (AN_6 and CM_7) had multiple load values for more than one dimension and were considered overlapping and therefore removed from the final scale. Thereafter, the analysis was repeated on the retained items on the data set and left the final scale at a five-factor structure of 37 items which is consistent with the theory.

Table 2

Items and EFA Result on Teacher Leadership Competence

		Factor Loading				
	Items	**Analytical**	**Personal**	**Communication**	**Positional**	**Organizational**
	As a teacher, I:					
AN_5	try to meet each student's needs using different teaching approaches	.734				
AN_2	understand how to build my instruction based on my knowledge of students	.719				
AN_3	engage students with appropriate content and supporting materials	.689				
AN_1	analyze strategically to realize learning objectives	.678				
AN_4	welcome contributions from others when solving complex problems during instructional delivery	.481				
PR_2	see my work as an act of worship		.785			
PR_4	am a forgiving person		.740			
PR_5	am committed to the growth and development of		.640			

	my students					
PR_3	have sincere intention to work		.639			
PR_7	take a caring stance to ensure that all students feel valued		.581			
PR_1	learn from others		.515			
CM_1	listen intentionally to all students to fully understand what is communicated			.824		
CM_3	read my students through non-verbal cues			.792		
CM_4	receive feedback honestly, openly and constructively			.775		
CM_2	strategically structure dialogue and discussion to further specific learning goals			.663		
CM_5	effectively use technology to enhance communication			.627		
PS_1	admit when I am wrong				.806	
PS_6	pay attention to each student individually				.741	
PS_7	continually reexamine my practices in classroom				.703	
PS_2	share information with students				.691	
PS_3	recognize talents of my students				.667	
PS_4	inspire students to strive beyond their capabilities				.609	
PS_5	take risks in order to support my students' learning				.586	
OG_1	work within the rules of the school					.795
OG_2	contribute to decisions made in the school					.701
OG_4	encourage stakeholder participation in my class					.631
OG_6	pose the right question to the right people at the right time					.628
OG_7	translate my school's goals for improvement into my own classroom practices					.592
OG_5	consult established hierarchies to complete tasks.					.582
OG_3	welcome views of other teachers that are different from mine					.518
Variance Explained (%)		47.532%	35.060%	47.036%	40.462%	37.035%
Kaiser-Meyer-Olkin		.762	.650	.747	.748	.802
Bartlett's Test if Sphericity (Sig.)		.000	.000	.000	.000	.000
Alpha Cronbach		.809	.732	.802	.808	.799
Overall Alpha Cronbach				.945		

As indicated in the analysis conducted in this study, the value of the Kaiser-Meyer-Olkin (KMO) for sampling adequacy for all analyses is .779 and Bartlett's Test of Sphericity test for every value has a significant *p-value* = .000, < 0.05 indicating that sample used for the study was adequate, information on each item in the data set and conceptual model was suitable and appropriate for the analysis and therefore guided the selection of final items. Considering the information shown in Table 2, teacher leadership competence comprised five sub-scales: analytical competence, personal competence, communication competence, positional competence, and organizational competence; with 30 items in all for these sub-constructs. With the EFA procedure, items in the scale were subjected to factor analysis using PFA to test the underlying factors as proposed in this study. In confirming the dimensions of the construct, it is important to check if the proposed factor structures are consistent with the data

before eliminating of data with high correlations. Data include responses from questionnaires duly completed by selected teachers from secondary schools in North Central and South East zones.

Originally, there were fifty-five question items in all for the adopted instruments. Regardless, the validity done with the help of experts reduced both items to thirty-five after validation was conducted. However, all items loaded well on their respective factors with five likely insignificant items with less than a .40 value expunged from the final scale, being the limit value utilized when assigning items to their respective factors in the final scale. The PFA indicates extraction sums of square loading stated by five selected variables with eigenvalues>1.

More so, the extracted sum of square loadings of variance depicts that teacher analytical competence accounts for 47.532% with eigenvalue > 1 (2.377) of the variance features from the observations, their personal competence has an eigenvalue > 1 = 2.104 with an explained variance of 35.060%, communication competence has an eigenvalue of 2.352 with the explained variance of 47.036%; positional competence has an eigenvalue of 2.832 with the explained variance of 40.462% while the fifth factor of organizational competence has eigenvalue of 2.592 with the explained variance of 37.035% (Table 2). Although two items had low cross-loading to other variables and were eliminated, all variables indicated in the output had strong item loadings on their respective components and were effective enough in representing all the components highlighted and, therefore considered significant for the study.

Table 3

Items and EFA Result on Quality Instructional Delivery

Code	Items	Factor Loading
	As a teacher, I:	
Qd_1	Assess my students through many evaluation techniques	.632
Qd_2	have access to laboratory facilities	.487
Qd_3	assign students to teams to work on some assignments/projects	.505
Qd_4	give class work to students	.727
Qd_5	encourage students to ask questions	.800
Qd_6	cover materials at an appropriate pace	.683
Qd_7	have access to textbook and course materials of high quality	.595
	Kaiser-Meyer-Olkin	.775
	Bartlett's Test if Sphericity (Sig.)	.000
	Alpha Cronbach	.739

4.2 Confirmatory Factor Analysis (CFA)

The second stage of the study included the CFA which was employed to verify whether the 5-dimensional measures of analytical, personal, communication, positional, and organizational leadership competence of teachers as proposed in this study are consistent with the construct using a 23-item structure extracted from the EFA results earlier obtained. In this regard, all items in the constructs were assembled as proposed in the conceptual framework (figure 2) and were analyzed using the pooled CFA method which allows for the assessment and validation of the measurement model for all constructs involved in this study at once. Items having a lower factor loading of less than .50 in each construct were deleted from the first-level CFA for teacher leadership competence. This becomes necessary to fulfill the requirements of SEM's model-fit indices. To achieve this, this study highlights the composite reliability, convergent validity and discriminant validity using the AMOS software to create the model graphics and evaluate the measurement model.

Table 4 shows the standardized loadings of the items in the table are high and above 0.5, the reliability of measurement constructs was attained by their CRs which are significantly above 0.7, meaning that all the AVE values in Table 4 are acceptable. The convergent validity of the teacher leadership competence scale was examined through the composite Reliability (CR) and Average Variance Explained (AVE) values exceeding 0.60 and 0.50 respectively to ensure that estimated parameters for constructs are not biased by measurement errors (Edeh et al., 2023). As shown in Table 4, the CR and AVE values of 0.813 and 0.523 respectively are due for the first factor of Analytical Competence, while 0.811 and 0.519 were CR and AVE values for the second factor of Personal Competence. Communication competence which is the third factor accounted for the values of 0.720 for the CR and 0.588 for AVE while the fourth factor of positional competence attributed the values of 0.832 and 0.600 being accounted for the CR and AVE respectively

Table 4

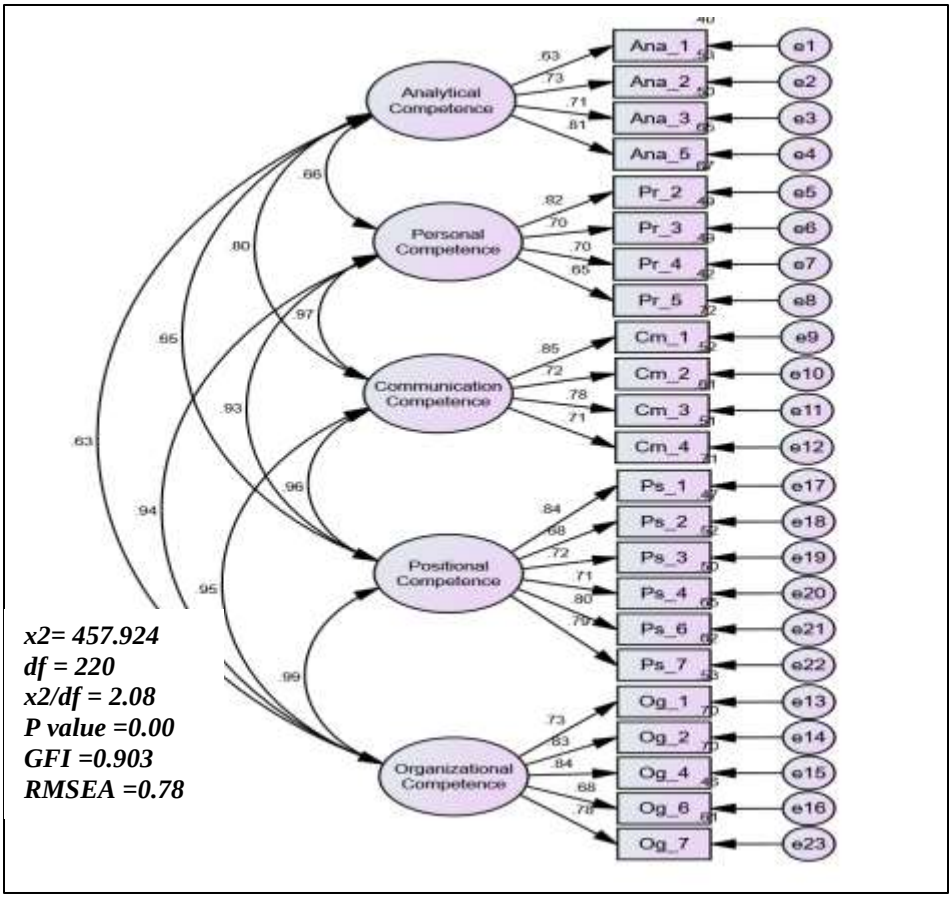
CFA Report for Constructs of Teacher Leadership Competence Model

Construct	Items	Standardized Estimates	CR (≥ 0.60)	AVE (≥ 0.50)	Squared Loading
Analytical Competence	An_1	.63	0.813	0.523	
	An_2	.73			
	An_3	.71			
	An_5	.81			
Personal Competence	Pr_2	.82	0.811	0.519	
	Pr_3	.70			

	Pr_4	.70		
	Pr_5	.65		
Communication	Cm_1	.85	0.720	.588
Competence	Cm_2	.72		
	Cm_3	.78		
	Cm_4	.71		
Positional	Ps_1	.84	0.890	.694
Competence	Ps_2	.68		
	Ps_3	.72		
	Ps_4	.71		
	Ps_6	.80		
	Ps_7	.79		
Organizational	Og_1	.73	0.832	.600
Competence	Og_2	.83		
	Og_4	.84		
	Og_6	.68		
	Og_7	.78		
Quality Instructional	Qd_1	.65	0.840	0.514
Delivery	Qd_4	.77		
	Qd_5	.79		
	Qd_6	.72		
	Qd_7	.64		

S.E. = Standardized Estimate, C.R. = Composite Reliability, AVE = Average Variance Extracted, SL = Squared Loading

The last construct of organizational competence has a CR value of 0.840 and AVE of 0.514 which surpasses the threshold of 0.6 and 0.5 respectively. The endogenous variable of Quality Instructional Delivery has a high factor loading ranging from .64 - .79 with a CR value of .840 and AVE of .514. The mean-variance for all constructs must be greater than or equal to 0.5 and the composite reliability above 0.6 for constructs to have acceptable convergent validity (Fornell & Larcker, 1981). Results in Table 4 have sufficiently proved that there is enough evidence in this study to support and confirm the convergent validity of the constructs with standardized estimate values which range from 0.63 – 0.84 and multiple squared loading correlation values (threshold > 0.35) which revealed the amount of variance explained to the observed variables to have high loading. These findings prove that the convergent validity, composite reliability, and model fitness of the scale have been achieved as experts (Malhotra, 2010; Fornell & Larcker, 1981; Hair, Hult, Ringle, Sarstedt, 2017) recommend that the use of both are adequate to conclude convergent validity as loading of 0.70 or higher indicates that the construct is explaining 50 percent or more of the variation in the observed variable.



The default model revealed the chi-square value which is calculated as discrepancy divided by degrees of freedom is 457.924/220 = 2.08 which should be less than 3.0, hence the threshold is achieved in this model. Hence, it could be said that the appropriate distributional assumptions in this model are met given the chi-square statistic obtained from the current data set; the data from the model is significant at .05 levels. The factor loading extracted from the initial model ranges from .35 to .81, therefore, it is necessary to drop items that are below .50 after which the measurement model was rerun and fitness indices were checked with results shown in Figure 3. However, upon completing the CFA procedure for the pool measurement model, the dimensionality, validity, and reliability of the measurement model were examined and reported.

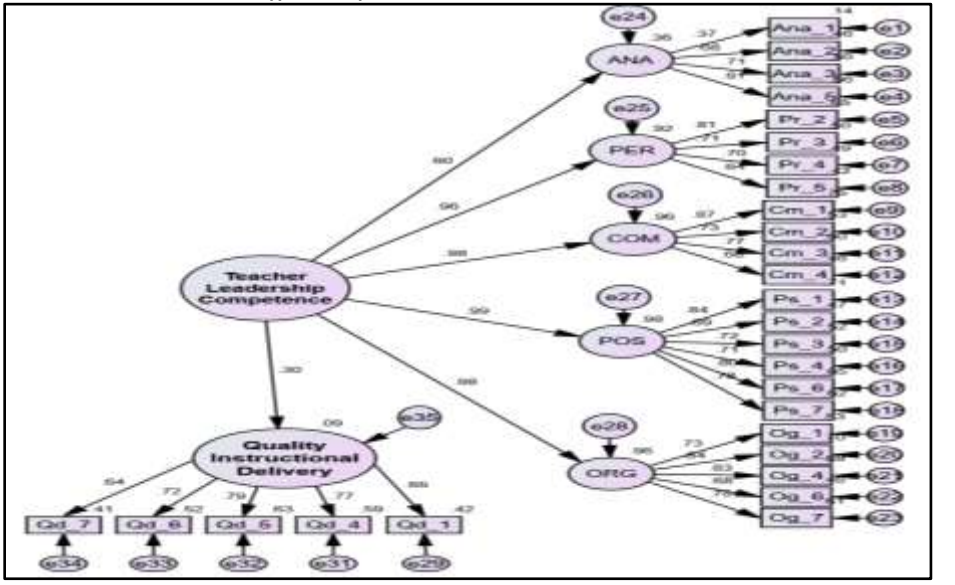
4.3 Dimensions of Leadership Competence that have a Significant Effect on Quality Instructional Delivery in Nigerian Secondary Schools

The structural model as shown in Figure 4 was constructed to allow the hypothetical path to be drawn between the exogenous and endogenous variables as observed through the corresponding measures as conceptualized in this study. Hence, the model was conceptualized as expressed in Figure 2 to illustrate the significant effect of teacher leadership competence on quality instructional delivery in secondary schools in Nigeria. The path analysis is used to compare the strength of direct and indirect association of the variables used in the study. To ascertain this strength, the path analysis was conducted using AMOS graphics 23 by identifying each item and using them to define the model and specify the variables with the hypothesized relationships (see Figure 4).

The path diagram was drawn and the dataset was imported and assigned to each variable accordingly while parameters for regression and covariance were set for analysis. A review of the output from the analysis reveals parameter estimates, standard errors, and fit indices to interpret the results and check the significance of each path using critical ratios and p-values. The standardized regression weight of the estimated β score in the model indicated that when teacher leadership competence goes up by 1 standard deviation unit, quality instructional delivery goes up by β value of 0.30 standard deviations; of all the constructs of teacher leadership competence. This assessment was grounded on the estimated β score of the path coefficient with t-value (critical ratio – CR) ≥1.96 of the parameter estimate significant at 0.05 level in deciding the significance path coefficient between the exogenous and endogenous variable (Bryne, 2001). Analytical competence accounts for 60% of the estimated latent variable of teacher leadership competence.

Figure 4

Standardized Path Co-efficient for the Structural Model



In answering this research hypothesis which states that dimensions of leadership competence have a significant effect on quality instructional delivery in Nigerian secondary schools, the study estimates the structural model using path analysis. Figure 4 shows the factor loading of all constructs in the hypothesized model with results of quality instructional delivery having items loading within the range of .64 and .79, while the order of teacher leadership competence (analytical, personal, communication, positional and organizational) loaded within the range of .37 to .83. However, all loadings are acceptable based on the study of (Rahi, 2017).

Table 5

Estimate of regression weight for the effect of teacher leadership competence on quality instructional delivery in secondary schools, Nigeria

Path	(β)	SE	CR	P-Value	Decision
ANA→QID	0.55	0.30	1.820	***	Reject

The findings show that teacher leadership competence has a significant direct effect on quality instructional delivery with an estimated value of (0.30 at 0.002 p-value). By implication, therefore, if leadership competence of teachers is improved by one standard deviation, there is the possibility of 30% increase in

their quality of teaching which will further enhance quality instructional delivery in the classroom.

5. Discussion and Conclusion

This study has established initial evidence for the theory of leadership competence. In this regard, the teacher leadership competence model was structured based on 5-factor measured on 23 items questions to cover the constructs of analytical, personal, communication, position, and organizational competence which constitute the sub-dimensions of the scale, while quality instructional delivery which is a one factor of five items in this study. Although studies have established initial evidence for the strength and concurrent validity of the teacher leadership competence measure (Ozdemir, Karademz & Turan, 2021; Tsai, 2015), this study extended this by conducting a confirmatory factor analysis of the scale among Nigerian teachers through an empirically-driven analysis of participants' opinion. The study established the dimensionality of the constructs and items in the instrument through factor loading ≥ .40 as suggested by Stevens (2002). In this study, the value of the Kaiser-Meyer-Olkin (KMO) for sampling adequacy for all analysis is .779 and Bartlett's Test of Sphericity test for every value has a significant *p value* = .000 indicating that information on each item in the data set and conceptual model was suitable and appropriate for the analysis and guide the selection of final items.

Among the five dimensions of teacher leadership competence scale, the result of EFA obtained revealed that the scale is a valid and reliable tool that can be used to measure the leadership competence of teachers according to the perceptions of Nigerian secondary school teachers. In particular, the analytical competence scale which captures fundamental skills a good teacher required for being thoughtful, strategic and solve problems has an alpha value of .809 with loading range between .481 and .734 of the five items retained. The importance of teacher personal values as a leadership competence skill cannot be overemphasized. The personal competence of teacher (α=.732) which focuses on teachers' ability to inspire students through strong character, values, ethics and emotional stability with six items loading ranging from .515 and .785 as obtained from the analysis. The third dimension, communication (α=.802) has five items loaded between .627 and .824 for the sub-scale. Positional leadership competence (α=.808) has items loading ranging from .586 and .806 while organizational leadership competence (α=.799) has .518 and .795 factor loading on the subscale.

In line with the constructs of teacher leadership competence, its measure as used in this study was confined to five sub-scales in the model. It was found out that the model is fit with the dimensions of the construct and suitable to measure the construct of quality instructional delivery. In addition, the model

appropriately fits the data utilized in this study to reflect this construct demonstrating the validity and reliability of the theoretical model. The results as revealed in the scores obtained from the CFA results of the teacher leadership competence sub-scale indicated that personal, communication, position and organizational competence are the dimensions of leadership that best describes teacher leadership competence required for quality instructional delivery in classroom. The factor loading for all constructs ranges from 0.635 to 0.858. This range is in line with the submission of Hair et.al (2009) that all standardized factor loadings should be at least 0.5 to be considered suitable.

The second objective formulated in this study is to identify the dimensions of leadership competence (analytic, personal, communication, positional and organizational) that have significant effect on quality instructional delivery in Nigerian secondary schools. However, it was hypothesized that the constructs of analytical, personal, communication, position and organizational competence which constitute the sub-dimensions of teacher leadership competence significantly affect quality instructional delivery in Nigeria secondary schools. The findings in this study confirmed no significant direct effect between the construct of analytical competence and quality instructional delivery. Although, analytical competence in classroom situations can be seen as a crucial aspect for teacher professional development, a research study on fostering analytical competency of preservice teachers in a computer-based learning environment reveals that the question regarding how to foster the crucial analytical competence such as immersion of learners in multiple perspectives remains open as immersion hardly occur among participants regardless of the learning environment condition to which they were assigned (Zottmann, et al., 2012). Similar study of Zumbach, Haider and Mandl (2008) emphasize that most cases implemented to educate learners in analytical skills comprise chunks of reality, that is, complex and authentic situations that require analysis, problem-solving, and decision making. In order to effectively foster the analytical competency of teachers therefore, instructional support is required to aid teaching and learning process and further support learners in the application of their conceptual knowledge to the case, and aids their immersion into multiple perspectives (Kirschner, Sweller, & Clark, 2006). Significantly, teachers might need more time and experience with suitable learning environment in order to develop their analytical skills for effective instructional delivery in classroom. Although effective leadership involves defining the school mission, managing instructional programs, and fostering a positive learning climate, this study highlights the significant impact of teacher leadership competence on quality instructional delivery in schools. It emphasizes the critical factor leadership plays

in determining the quality of teaching in secondary schools. Teacher who possesses strong leadership skills are better equipped to design and deliver engaging and effective lessons that could lead to improved students' learning outcomes. By implication, students learning outcomes which include academic achievement, motivation to learn and enhanced instructional delivery are positively affected by teacher leadership competence.

6. Recommendations

Following recommendations were drawn on the basis of findings of study;

1. There is need to school administrators to prioritize leadership development programmes to enhance quality of instruction and student achievement in schools through targeted training, mentoring and coaching of teachers towards enhancing their leadership skills, instructional design, lesson delivery and most importantly creating positive learning environment where both teachers and students can thrive.
2. This study was conducted in Nigeria among secondary school teachers only; it does not capture the principals of secondary schools. Also, the scale does not measure the relationship between teacher leadership competence and its influence of other school factors like school effectiveness, students' performance, and teacher effectiveness and teacher productivity. Therefore, further research can be conducted using this scale to examine the influence of teacher leadership competence on other school factors.

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