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Discharge of pedagogic duties: a bootstrapped structural equation modelling of teachers' use of research materials in school libraries

Valentine Joseph Owan[A] *A* *Department of Educational Foundations & Department of Educational Management, University of Calabar, Calabar, Nigeria*

Mercy Valentine Owan[B] *B* *Ultimate Research Network (URN), Calabar, Nigeria; Department of Educational Management, University of Calabar, Calabar, Nigeria*

Neha Lata[C] *C* *Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow, India*

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Correspondence

neha.l.r8889@gmail.com [C]

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Abstract

A large body of literature focuses on teachers' service delivery and other related concepts. However, most of them have been judged to be generic. Measuring teachers' service delivery generally does not picture events in specific areas. This study used a bootstrapped structural equation modelling to analyse how teachers' use of library research materials (ULRMs) predicts teachers' discharge of pedagogic duties across seven areas. A structured questionnaire collected primary data from 2,406 teachers and 7,218 students who consented and participated voluntarily. Exploratory and confirmatory factor analyses were used for dimensionality and goodness of fit tests. Convergent and discriminant validities were achieved based on average variance extracted (AVE) and squared correlation. The internal consistency measures were Cronbach's alpha, McDonald's Omega, and composite reliability. Results of the study showed among others that the teachers' ULRMs is a significant direct predictor of teachers' lesson preparation ($\beta = .48$, $p < .001$), use of instructional materials ($\beta = .53$, $p < .001$) and instructional delivery ($\beta = .20$, $p < .001$). Teachers' lesson preparation had a significant direct effect on their use of instructional materials ($\beta = .39$, $p < .001$), classroom management ($\beta = .19$, $p < .001$), instructional delivery ($\beta = .45$, $p < .001$) and lesson evaluation ($\beta = .29$, $p < .001$). Significant mediation effects were recorded on the link between the ULRMs and teachers' pedagogic duties. This study has empirically proven that teachers' use of library research materials is crucial for the instructional process. It serves as the information bank in schools and as a source of instructional materials to enabling educational practitioners to plan and deliver practical lessons.

Highlights:

1. Teachers' discharge of pedagogic duties is an anchor point in secondary education.
2. Being able to evaluate lessons is associated with being able to provide feedback.
3. Teachers effectively utilised instructional materials, having planned how to use them.
4. Teachers' lesson preparedness effectively decided their choice of instructional strategy.

Introduction

Teachers' service discharge is one aspect that impacts school effectiveness and learning outcomes in the educational system. To maintain a high level of professional service discharge in the classroom, teachers must take responsibility for their actions, performance, growth, and development. Teachers are also tasked with providing learners with academic and social directions, discipline and controlling classroom activities. They also encourage learners to study and engage actively in other classroom activities. Several indicators are considered when measuring teachers' discharge of duties. These include punctuality, time management, academic performance of students, relationship with other staff, respect for rules and authority, adherence to school norms, communication skills, record keeping, professional behaviour (Bassey et al., 2019), quality of teaching, response to students' learning processes, and pedagogical practices (Owan & Agunwa, 2019).

However, previous studies on teachers' effectiveness in Nigeria reveal that many instructors are not performing their roles as expected (Awodiji & Oluwalola, 2021; Sule & Okon, 2019). This shows that the problem of teachers' poor discharge of duties is pervasive; hence, it has attracted the attention of many scholars. In the literature, other terms commonly used synonymously with teachers' discharge of duties include but are not limited to (a) teachers' job effectiveness, (b) teachers' effectiveness, (c) teachers' job performance, (d) teachers' work performance, (e) teachers' role performance, (f) teachers' service delivery, (g) teachers' performance effectiveness, (h) teachers' job commitment, and so on. Much research on teachers' service discharge has considered several variables as presumed causes, correlates or predictors based on their designs. These variables can be grouped into factors about the school organisation, school managers, teachers themselves, and policymakers.

School-related variables often considered in the literature in the discussion of teachers' service discharge include school location, size, ownership (Masci et al., 2018), organisational culture (Emengini et al., 2020), management practices (Arop et al., 2020; Duan et al., 2018). Variables connected to the school managers that are often considered in the literature as correlates of teachers' service discharge are personnel management, management of library resources, discipline control, leadership styles, employee work-life policies, mentorship, staff psychological empowerment, staff retraining, motivation and placement, quality assurance, (Limon & Nartgün, 2020; Oguntimehin et al., 2018; Owan et al., 2020, 2022b). Others include internal marketing, supervision, communication skills, participatory management practices and administrative competence, hazard, conflict management and school resource management (Asuquo & Ekpoh, 2018; Duyan, 2020; Edet et al., 2017; Muñoz et al., 2019, 2021; Tayebwa et al., 2021; Yao et al., 2020).

Factors about the teachers themselves that are widely reported to affect their performance as they discharge services include age, gender (Green et al., 2016; Shaukat et al., 2019), commitment, attitude, interest and motivation (Wang et al., 2019; Werang et al., 2017), technostress inhibitors and creators (Li & Wang, 2021), emotional intelligence (Li et al., 2018), neuro-linguistic programming and identity (Javadi & Asl, 2020), soft skills (Awodiji & Oluwalola, 2021), educational qualification, years of work experience, job satisfaction (Taiwo et al., 2019) and over-schooling (Ebimobowei & Ogundare, 2020). Factors connected to policymakers often reported to affect the job performance of teachers include the quality of school facilities, supervision, recruitment practices (Lestari et al., 2020), quality assurance (Lawal, 2021), minimum wage provision (Adekanmbi & Ukpere, 2021), salary payment and staff promotion (Mohammed et al., 2019), school funding and conditions of service (Enwezor, 2020).

Although a large body of literature focuses on teachers' service delivery, job performance, and other related concepts, most of it has been judged to be excessively generic. It can be argued that what constitutes teachers' service discharge is broad and can be viewed from multiple perspectives. An effective teacher can be viewed beginning from the quality of training received. In this view, a teacher is expected to receive the proper training to enable him to function on the job. Another aspect of teachers' service discharge may be viewed from their input towards service delivery. In this context, variables that can be considered include quality of teaching, punctuality, lesson planning, record keeping, and classroom management. The personality of a teacher constitutes another aspect of effectiveness where indicators such as subject proficiency, communication abilities, self-concept, dressing, attitude to work, self-efficacy and others can be considered. The emotive qualities of learners may be influenced by how teachers behave and carry themselves; hence, teachers' personality connotes effectiveness. We may evaluate a teacher's efficacy in students' academic success from the production standpoint. As a result, it is difficult to claim that teachers are ineffective or otherwise across various manifestations, as most research implies.

Although studies, particularly those in the national literature, use shallow measures that treat teachers' job performance as a unidimensional construct (e.g., Akhtar & Iqbal, 2017; Arop et al., 2019; Edo & David, 2019; Ereño & Nunez, 2014; Pari & Azalea, 2020), the construct has been widely proven to be multidimensional in several studies (e.g., Ali & Haider, 2017; Amin et al., 2013; Mehmood et al., 2013; Owan et al., 2020, 2022b; Yusoff et al., 2014). These dimensions are classroom discipline, commitment, communication effectiveness, effective leadership, extracurricular activities, instructional delivery, lesson preparation, classroom monitoring/inspection, students' motivation, student evaluation, teaching competence, teaching methods and use of teaching aids (Adeyemi, 2010; Bassey et al., 2019; Ekpoh & Eze, 2015; Owan & Agunwa, 2019). Others include instructional, personal and professional qualities (Ali & Haider, 2017); classroom management, considering individual differences among students, using motivational tools continuously, finding solutions to students' problems and providing feedback (Mehmood et al., 2013; Owan et al., 2021). More broadly, other dimensions include counterproductive behaviour, task, contextual and adaptive performance (Limon & Nartgün, 2020; Sultana, 2020; Yusoff et al., 2014).

However, measuring teachers' job performance as unidimensional does not picture events in specific areas. For instance, it is difficult to state how much teachers perform in specific areas since most studies in the literature do not focus on them. It is also difficult to state how different variables (about the school, teachers, policymakers, or school leaders) contribute to particular areas of teachers' service discharge. The current study was designed to bridge this gap by focusing on teachers' discharge of pedagogic duties. Pedagogic duties refer to teaching-related activities undertaken by teachers to promote learning. These services include those performed mainly in the classroom, such as lesson preparation, instructional delivery, classroom management, chalkboard management, communication, understanding learners' differences and social interactions with students, lesson evaluations and following expected ethical practices in teaching. The current study is also designed to link teachers' use of research materials in school libraries to their performance of pedagogic duties.

The school library is an information warehouse where a pool of valuable materials for staff and students can be found. It serves as the school's information bank or hub (Owan et al., 2022a). A library integrates research contents from staff, students, and traditional sources, provides robust meta-data structure across disciplines and supports constant access across all collections (Attig et al., 2004). Practical usage of school libraries, it has been said, guarantees that students and instructors have access to information, develop cultural knowledge, adapt to society, and receive information technology training and certification in a variety of subjects (Ness, 2011; So & Song, 2018). It has also been proven that principals' managing diverse library materials enhance their pedagogic effectiveness in lesson preparation (Owan et al., 2021). The study by Owan et al. did not provide information about how teachers discharged services in other areas, such as knowledge acquisition, subject proficiency, and instructional delivery. Furthermore, the cited study assessed principals' management of library resources, but the present study focused on teachers' use of research materials in school libraries.

Research materials are evidence-based resources that can help teachers improve their instructional delivery in a more specific sense. Many research papers have been published in the last decade, with several recommendations to improve teachers' pedagogic practices. However, it remains unclear how secondary school teachers access these resources to improve their teaching practices. Research materials include journals, magazines, professional/trade sources, books/book chapters, conference proceedings, government documents, theses and dissertations (New Mexico State University Library [NMSU], 2022). These materials are unique because they are research products that have undergone scrutiny by experts. They contain information to help teachers, school leaders, students, and other interested personnel solve many problems. Due to this importance, previous studies have assessed the challenges connected with staff and students' use of library materials (Shafiu et al., 2019; Shandu, 2014). Related studies have also linked staff utilisation of libraries to variables such as their awareness (Yebowaah & Plockey, 2017), perception and attitudes (Mangrum & Foster, 2020; Ukaegbu, 2020) and satisfaction (Arua & Chinaka, 2011). Studies on library utilisation in the school system have related it to library staff's performance (Tella & Ibinaiye, 2020) and students (Muthurasu & Suganthi, 2020).

However, one typical pattern noted is that most cited studies were concerned with academic staff in higher education institutions. This implies that literature is scarce on utilising library research materials, especially by teachers in secondary schools, and it creates a knowledge gap regarding how instructors use library resources to promote teaching and self-development. Although many researchers have associated library use with teachers' service delivery (e.g., Adeoye & Popoola, 2011; Owan et al., 2021), they were too general. To the best of the research knowledge, through the extensive review conducted, no existing study has assessed teachers' use of research materials in school libraries as a correlate of their effectiveness.

The current study bridged the gap in the literature by using a bootstrapped structural equation modelling to estimate whether teachers' use of library research materials (ULRMs) directly predicts their lesson preparation (LP), use of instructional materials (UIM) and instructional delivery (ID) respectively. The study also quantified how teachers' UIM directly predicted their ID, classroom management (CM), and classroom feedback (CF). The direct prediction of teachers' LP on their UIM, CM, ID and lesson evaluation (LE) was further estimated. The direct contribution of teachers' ID on their CM, LE, and understanding of learners' differences (ULD) was investigated. We estimated how much teachers' LE directly predicted their CM and ULD, respectively. The extent to which teachers' CM contributes directly to their classroom feedback (CF) and ULD was determined. We also determined whether teachers' LE directly affects their CM. The study also determined the indirect relationships among these variables. The study also examined the proportion of variance explained by the predictors to endogenous variables and the mediation effects of different variables in linking different predictors to different response variables.

Conceptual framework and hypotheses development

Owan et al. (2021) laid the groundwork for the current study by revealing that principals' management of library resources is an essential predictor of teachers' lesson preparation practices. However, we argued that principals' management of library resources might not directly affect lesson preparation if teachers do not make use of these resources. Thus, we hypothesised that it is teachers' use of library resources that may directly affect their lesson preparation (LP), instructional delivery (ID), and use of instructional materials (UIM). The theory of operant conditioning maintains that individuals' behaviour can be shaped through reinforcement by associating it with a stimulus (Skinner, 1938, 1971, 1984). In the classroom, students' behaviour can be reinforced through lesson evaluation and motivation practices to determine how well they have mastered lesson contents (Hundert et al., 1976; Lan, 2020; LeGray et al., 2013). Lesson evaluation is usually based on the learning objectives for each class, which in turn may affect teachers' choice of teaching method or instructional strategy (Arop et al., 2018; Umar & Salihu, 2015; Youxing et al., 2020). Thus,

we hypothesised that teachers' ID has a direct effect on their lesson evaluation (LE), classroom management (CM) and understanding of learners' differences (ULD).

According to Aydin (2013), lesson planning, implementation and evaluation are complex instructional processes that are intertwined. In fact, a teacher teaches what was planned and evaluates what was taught (Arop et al., 2018; Bassey et al., 2019). Furthermore, it has been proven that effective teachers decide how to teach and manage classrooms during lesson planning (Anderson et al., 1980; Black et al., 2019). Furthermore, it has been stated that teachers may include proactive, evidence-based classroom management practises into their lesson plans to increase student success, including those with impairments, and minimise behaviour issues (Ali, 2021; Nagro et al., 2019). For these reasons, LP was hypothesised to directly predict teachers' ID, LE, CM, and ULD.

Teachers' ULD was hypothesised to directly predict their ID, CM, and classroom feedback (CF). This hypothesis is anchored on the idea that teachers' understanding of learners' differences has been stated to affect how they manage and diversify classroom instruction for inclusiveness (Kaikkonen, 2010; Kasebusha & Banda, 2021). Also, how teachers understand their learners differing needs determines the kind of feedback they provide and the subsequent tasks they assign (Kaoropthai & Srimavin, 2007; Watson et al., 2016). Based on the preceding, LE was hypothesised to predict teachers' CM, CF and ULD directly. The hypothesis was based on experience that lesson evaluation, especially questioning, often minimises students' noisemaking and rowdiness in the classroom. However, such an experience must be empirically tested for a better understanding. Furthermore, lesson evaluation can offer students feedback (Arthur & Golder, 2020; Aydin, 2013; Morano & Riccomini, 2021) or help them understand their differences (Bassett-Dubsky et al., 2022; Halkiyo, 2022). For instance, a teacher can identify a fast or slow learner during lesson evaluation.

Similarly, teachers' CM was also hypothesised to be directly connected to their CF and ULD. This hypothesis was developed because classroom management is complex due to the variety of classroom scenarios, learners' diversity, and the complexity of the classroom itself. Therefore, teachers' perceptions and interpretations of classroom events and their ability to manage such activities vary with their information and degree of experience (Wolff et al., 2021). Furthermore, how teachers manage their classes, including sitting arrangement, layout and organisation, can go a long way to determining the extent to which they can monitor all students for individualised teaching (Scherzinger & Wettstein, 2019; Schwab et al., 2022). Lastly, teachers' CF was hypothesised to directly predict their ULD. This hypothesis was developed because, during the feedback process, teachers can identify differences in learners to reshape their subsequent teaching and evaluation activities. For instance, a study has shown that structured instruction using visual and/or verbal cues, direct teaching, and systematic instructor feedback may aid in the long-term retention and retrieval of new knowledge for people with down syndrome and intellectual impairment (Lappa & Mantzikos, 2021). Following the series of hypotheses formulated for this study, the conceptual model (Figure 1) was developed. In Figure 1, the ULRMs is the core exogenous variable, whereas the ULD is the core endogenous variable. All other variables are mediators of several linkages, making it possible to estimate different indirect effects.

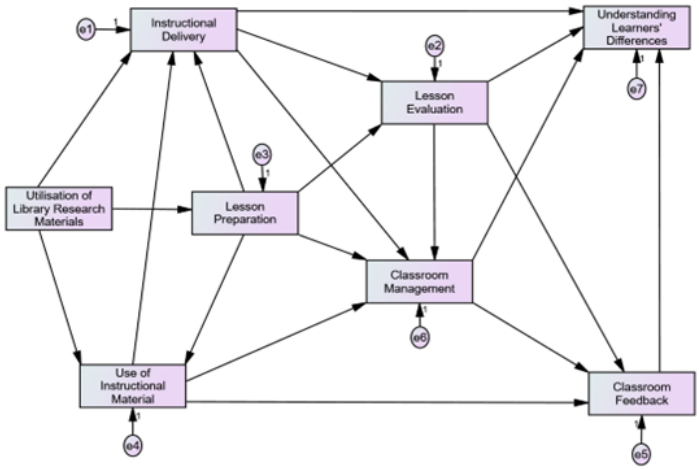

Figure 1: Hypothesised conceptual model of the study.

Methods

Research design and participants

The study followed the quantitative research method based on the descriptive survey design. The participants of this study comprised 4,876 teachers distributed across three education zones. A cluster random sampling technique was implemented and 50% of the population of respondents in each cluster was selected as follows: cluster 1 – Calabar Education Zone (n = 1,985; n = 993), cluster 2 – Ikom Education Zone (n = 1,644; n = 822) and cluster 3 – Ogoja Education Zone (n = 1,247; n = 624). The overall sample of this study is 2,439 teachers. However, three students from the classes taught by the participating teachers were used to assess their service discharge. A total of 7,317 respondents were randomly selected for the purpose through the simple random sampling technique.

Instrument and measures

Data for this study were collected using two instruments entitled "Utilisation of Library Research Materials Scale (ULRMS)" and "Teachers' Discharge of Pedagogic Duties Questionnaire (TDPDQ)." The researchers developed both instruments based on a pool of information drawn from a review of related literature. For instance, Koopmans et al. (2013) proposed the most comprehensive framework for job performance. Their framework and the suggested indicators were followed to develop the items pooled for the current instrument. Similarly, several other measures and scales were used to increase the number of potential items (e.g., Bhat & Beri, 2016; Carlos & Rodrigues, 2016; Limon & Nartgün, 2020; Owan et al., 2020, 2022b; Yusoff et al., 2014). Teachers responded to the ULRMS, which comprised 10 library research materials, by rating the frequency at which they utilise them. Response options in the instrument consisted of a five-point Likert scale such as (1) Never, (2)

Rarely, (3) Sometimes, (4) Often, and (5) Always. The items in the ULRMS were pooled from the study of Owan et al. (2021).

The TPSDQ comprised 40 items for students to indicate the extent to which they agreed or otherwise with the statements. Response options in the questionnaire included strongly disagree, disagree, neutral, agree and strongly agree. Items in the TPSDQ were developed to cover eight pedagogic areas since the construct is multidimensional. Although studies, particularly those in the national literature, use shallow measures that treat teachers' job performance as a unidimensional construct (e.g., Akhtar & Iqbal, 2017; Arop et al., 2019; Edo & David, 2019; Ereño & Nunez, 2014; Pari & Azalea, 2020), the construct has been widely proven to be multidimensional in several studies (e.g., Ali & Haider, 2017; Amin et al., 2013; Mehmood et al., 2013; Owan et al., 2020, 2022b; Yusoff et al., 2014). In the current study, we developed an instrument to measure teachers' discharge of pedagogic duties, a dimension of teachers' job performance. An instrument was developed due to the absence of an existing one measuring that aspect of teachers' job performance. Previous instruments mostly treated different aspects of pedagogic duties as separate indicators of teachers' job performance (e.g., Adeyemi, 2010; Bassey et al., 2019; Limon & Nartgün, 2020; Owan et al., 2020, 2022b). The scale will help researchers to collect specific data on teachers' delivery of pedagogic duties without discrediting previously-developed generic scales on teachers' job performance. Future studies can also use the scale to identify the degree of teachers' effectiveness across the dimensions of teachers' pedagogic duties and obtain findings that can be used to increase the quality of education.

Validity and reliability

Both instruments were subjected to face and content validities by 17 domain experts (Library and Information Science [LIS] experts (n = 7); Curriculum and Teaching [CT] experts n = 7). Three psychometric experts were also consulted to offer their opinions on the suitability of the items to the chosen scale formats. All the experts used were university academic staff and professors with over 15 years of work experience. This background made them suitably qualified to provide quality assessment and judgement to the items. The experts' suggestions were incorporated in refining the instrument into the final version. The quantitative approach to content validity was implemented according to earlier procedures, followed by other scholars (e.g., Yusoff, 2019; Zamanzadeh et al., 2015). For the URLMS, Items Content Validity Indices (I-CVIs) ranged from 0.86 to .99. In contrast, Individual Item Proportion of Relevance (IIPR) ranged from .90 to .99. The Scale Content Validity Index by Average (S-CVI/Ave) of the URLMS = .97. However, the Scale Content Validity Index by Universal Agreement (S-CVI/UA) of the URLMS = .80. In contrast, the average proportion of items considered relevant by the seven LIS experts = .97. This suggests, on average, that 97% of the assessors considered the items in the URLMS as being relevant. For the second instrument (TPSDQ), I-CVIs ranged from .71 to .99; the IIPR ranged from .88 to .99. The scale properties of the TPSDQ were as follows – S-CVI/Ave = .95, S-CVI/UA = .71, and the average proportion of relevance of the items was .95. This indicates that 95% of the assessors considered the items on the TPSDQ (on average) to be relevant. This range of values obtained was sufficient to establish content validities for both instruments (see Lynn, 1986; Yusof, 2019).

A pilot study was conducted on 100 teachers and 400 students from five public secondary schools in Cross River State for construct validity and reliability. For factor analysis, it is recommended that the respondents-to-item ratio of 10:1 should be maintained to avoid overfitting issues (Boateng et al., 2018). The pilot sample was large enough because ten and forty items were in ULRMS and TPSDQ, respectively. The respondents in the pilot sample were not part of the main study since they were selected from non-participating schools. Copies of the instruments were administered once and subjected to exploratory factor analysis (EFA) for dimensionality checks. The EFA was performed using principal axis factoring (PAF) based on a varimax rotation. Factors were allowed to be extracted based on eigenvalues greater than one and suppress small coefficients below .30. The analysis was performed using SPSS and Jamovi programs. Cronbach's alpha, MacDonald's Omega and Composite Reliability (CR) techniques were used to assess the internal consistency of the instruments. Both analyses declared the instrument usable, as shown in subsequent sections.

Data collection and analysis

Although the study involved human participants, ethical consideration was waived for this study due to no risk associated with respondents filling out survey instruments as per the National regulations (see evidence at National Code of Health Research Ethics, 2007). However, written informed consent was obtained from all the voluntary participants of the study. Data for the main study were collected with the assistance of 10 research assistants. A total of 2,406 teachers participated voluntarily, although 2,439 were targeted. A total of 7,218 students (three per teacher) were eventually used for the study. Collected data were retrieved from these participants for data analysis. A structural equation modelling approach was used to study various parsimonious links among the predictors, mediators and outcomes variables.

Results

Exploratory Factor Analysis

The EFA results for the ULRMS yielded a KMO value of 0.87, with a significant Bartlett's test of sphericity, $\chi 2(15) = 431.19$, $p < .001$. After screening items ULR2, ULR3, ULR7 and ULR9 that were dysfunctional (such as loading lonely, cross-loading across multiple factors, and not loading to any factor), only a factor was extracted that explained 63.21% of the variance. An examination of the scree plot also showed that only one factor had an eigenvalue above one. This indicated that the URLMS is unidimensional, with six acceptable variables. These six variables had loadings

such as .90 (ULR1), .87 (ULR6), .87 (ULR4), .84 (ULR5), .69 (ULR10) and .55 (ULR8).

For the TDPDQ, a KMO value of .785 was obtained, with a significant Bartlett's test of sphericity $\chi2(325) = 7583.33$, $p < .01$. A total of seven factors were extracted (after screening dysfunctional items) that cumulatively accounted for 69.79% of the variance. The variance explained specifically by the even factors were as follows: factor 1 = 19.97%, factor 2 = 12.31%, factor 3 = 10.40%, factor 4 = 9.18%, factor 5 = 7.04%, factor 6 = 6.09%, and factor 7 = 4.80%. Items loading across the seven factors ranged from .61 to .95. After a careful examination of the items that loaded to each latent factor, the factors were named lesson notes preparation (factor 1), use of instructional materials (factor 2), understanding learners' differences (factor 3), classroom feedback (factor 4), instructional delivery (factor 5), lesson evaluation (factor 6) and classroom management (factor 7). A summary of the factors, their respective items and loadings are summarised in Table 1.

Table 1: Exploratory factor analysis and convergent validity of the TDPDQ.

Items	*Min*	*Max*	*M*	*SD*	*Skew.*	*Kurt.*	λ	λ^2	ε	Reliability
DPD11	1	5	2.95	1.41	0.08	-1.31	.95	.90	.10	α = .95
DPD4	1	5	3.00	1.41	0.02	-1.31	.91	.83	.17	ω = .95
DPD5	1	5	3.00	1.42	0.02	-1.33	.89	.80	.20	CR = .94
DPD12	1	5	2.99	1.42	-0.01	-1.33	.89	.78	.22	
Lesson notes preparation		Sum	11.94	5.66	0.11	-5.28	3.64	3.31	0.69	
DPD39	1	5	2.95	1.38	0.06	-1.22	.94	.89	.11	α = .93
DPD36	1	5	2.97	1.41	0.03	-1.28	.92	.85	.15	ω = .93
DPD37	1	5	2.99	1.38	0.01	-1.23	.89	.79	.21	CR = .92
DPD25	1	5	2.99	1.37	0.06	-1.23	.76	.58	.42	
Use of instruct. materials		Sum	11.9	5.54	0.16	-4.96	3.51	3.11	0.89	
DPD15	1	5	2.96	1.44	0.00	-1.33	.86	.73	.27	α = .88
DPD21	1	5	2.97	1.41	0.01	-1.29	.84	.70	.30	ω = .88
DPD1	1	5	2.91	1.42	0.03	-1.34	.83	.69	.31	CR = .82
DPD30	1	5	3.04	1.46	-0.06	-1.37	.66	.43	.57	
Understanding learners' diff. Sum			11.88	5.73	-0.02	-5.33	3.19	2.55	1.45	
DPD20	1	5	3.09	1.40	-0.08	-1.24	.94	.88	.12	α = .94
DPD23	1	5	3.10	1.40	-0.04	-1.24	.93	.86	.14	ω = .94
DPD10	1	5	3.07	1.40	-0.04	-1.24	.89	.79	.21	CR = .93
Classroom feedback		Sum	9.26	4.2	-0.16	-3.72	2.76	2.53	0.47	
DPD8	1	5	2.96	1.39	0.04	-1.23	.95	.90	.10	α = .93
DPD9	1	5	2.94	1.38	0.05	-1.22	.92	.85	.15	ω = .93
DPD7	1	5	3.00	1.40	-0.03	-1.27	.86	.74	.26	CR = .92
Instructional delivery		Sum	8.9	4.17	0.06	-3.72	2.73	2.49	0.51	
DPD6	1	5	2.98	1.44	-0.01	-1.36	.76	.58	.42	α = .83
DPD18	1	5	3.07	1.41	-0.10	-1.30	.74	.55	.45	ω = .83
DPD2	1	5	3.02	1.48	-0.04	-1.42	.74	.55	.45	CR = .71
DPD33	1	5	3.07	1.46	-0.09	-1.38	.67	.44	.56	
Lesson evaluation		Sum	12.14	5.79	-0.24	-5.46	2.91	2.12	1.88	
DPD26	1	5	3.09	1.47	-0.10	-1.39	.70	.49	.51	α = .76
DPD31	1	5	3.04	1.43	-0.05	-1.33	.69	.48	.52	ω = .76
DPD27	1	5	3.17	1.41	-0.12	-1.30	.67	.44	.56	CR = .76
DPD28	1	5	3.09	1.44	-0.09	-1.33	.61	.37	.63	
Classroom management		Sum	12.39	5.75	-0.36	-5.35	2.67	1.78	2.22	

Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 5 iterations. λ = Factor loadings of the respective items; ε = Residual; α = Cronbach Alpha reliability estimate; ω = MacDonald's Omega reliability estimate; CR = Composite Reliability estimate; *M* = Mean; *SD* = Standard Deviation; Min = Minimum; Max = Maximum.

Convergent and discriminant validity

The Fornell-Larcker criterion, which uses the average variance extracted (AVE) per factor to test convergent validity, was employed (Fornell & Larcker, 1981). Convergent validity is achieved for a factor if AVE is greater than .50 (Eriksson et al., 2019; Lee, 2019). For the ULRMS, the AVE value of 0.63 was obtained, which is greater than the .50 threshold. Therefore, convergent validity is achieved for the ULRMS, indicating that the six retained items are theoretically related to their latent factor. For the TDPDQ, Table 2 shows that the AVE for the first six factors is greater than .50, excluding classroom management. Therefore, convergent validity is achieved for these six factors, suggesting that all the items loaded to these factors theoretically measure the same trait. Nevertheless, convergent validity may also have been achieved for the seventh factor because an AVE value of .45 was obtained, with a composite reliability value of .76. Different scholars have proven that convergent validity is achieved if the AVE of a factor is greater than .40 and the composite reliability is greater than .60 (Hair et al., 2021; Lam, 2012).

Discriminant validity was not performed for the URLMS since it is unidimensional. However, Table 2 presents the discriminant validity of the TDPDQ based on the Fornell-Larcker criterion. Discriminant validity is achieved if the squared average variance extracted for each factor is greater than their correlation with other factors (Ab Hamid et al., 2017; Hilkenmeier et al., 2020). As shown in Table 2, all the bolded values (squared AVE) of the seven latent factors are greater than their correlation with other factors. Therefore, discriminant validity is achieved for all factors, indicating that the seven factors are theoretically distinct (unrelated) in measuring teachers' discharge of pedagogic duties.

Table 2: Discriminant validity matrix of the TDPDQ.

Factors	AVE	CR	1	2	3	4	5	6	7
(1) Lesson Notes Preparation	.83	.94	**.68**						
(2) Use of instructional materials	.78	.92	.00	**.60**					
(3) Understanding learners' differences	.64	.82	.39	.10	**.41**				
(4) Classroom feedback	.84	.93	.10	.00	.00	**.71**			
(5) Instructional delivery	.83	.92	.00	.00	.00	.00	**.69**		
(6) Lesson evaluation	.53	.71	.46	.10	.41	.00	.00	**.28**	
(7) Classroom management	.45	.76	.00	.00	.00	.00	.00	.00	**.20**

AVE = Average variance extracted. Values above .50 are evidence of convergent validity. CR = Composite reliability estimates. Values above .70 are acceptable. Bolded values are square roots of AVE. Values below the diagonal are factor correlations. The square root of AVE must be greater than the correlation estimates below.

Reliability

The reliability of the scales in both instruments was assessed using Cronbach's alpha (α), MacDonald's Omega (ω) and Composite Reliability (CR) techniques. For the ULRMS, reliability estimates were α = .90, ω = .91 and CR = .91. These values indicate that the instrument (ULRMS) is internally consistent for data collection in the main study. For the TDPDQ, acceptable reliability coefficients were obtained for the seven scales/factors based on α, ω and CR thresholds (See Table 1).

Confirmatory Factor Analysis (CFA)

The CFA was performed to verify the legitimacy of the items in measuring their respective constructs, verify the results of the EFA and assess the acceptability or otherwise of the theoretical models (Owan et al., 2022b). Several fit indices were used to determine the acceptability or otherwise of the model (Kline, 2016; Perry et al., 2015). For the ULRMS model (see Figure 2), $\chi2(9) = 41.701$, $p < .001$ was obtained. However, due to the sensitivity of the Chi-square in committing type II error in a large sample size (Finch et al., 2016; Kline, 2016).

Also, the model's CMIN/df = 4.63 > 3.00 and AGFI = .77 < .80 suggest that the model has a poor fit. However, other fit indices showed signs of an acceptable model. For example, SRMR = .04 < .08, RMR = .08, NFI = .95, IFI = .96, TLI = .92 > ,90, CFI = .96, and RMSEA = .08 are all indicative of an acceptable model. Figure 2 also yielded similar coefficients that validated the EFA results. For the TDPDQ model (see

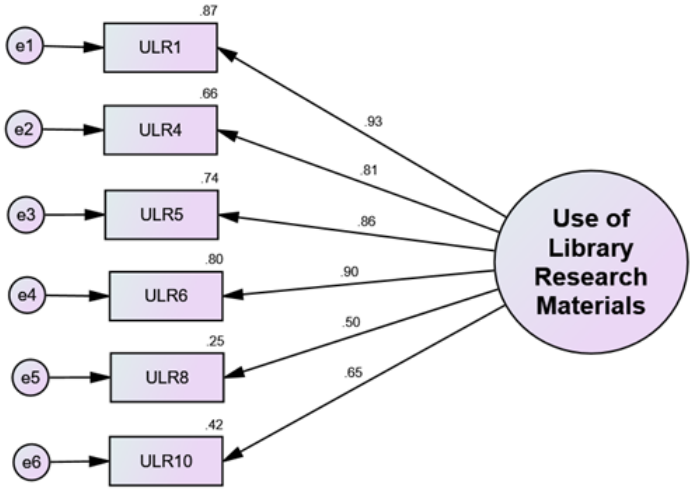

Figure 2: Confirmatory factor analysis of the ULRMS.

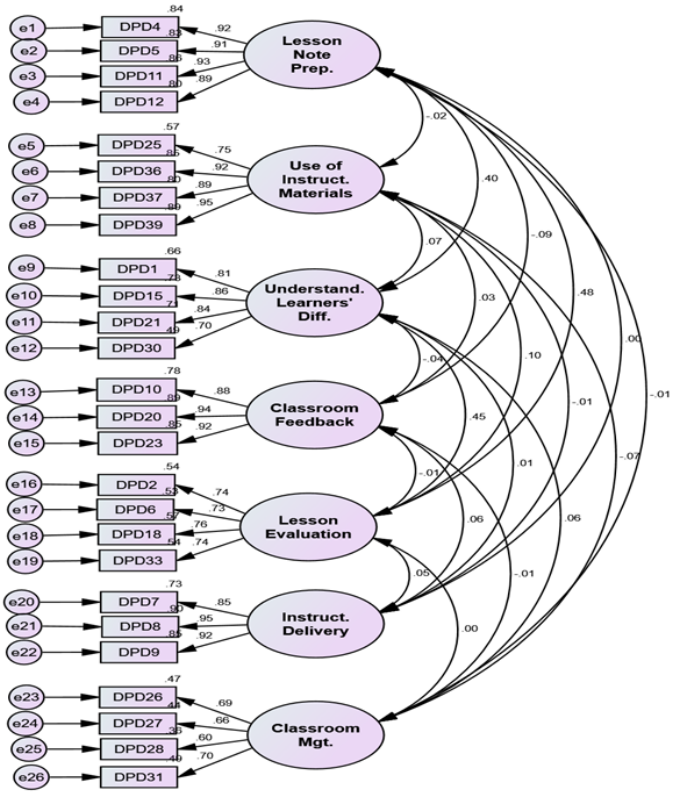

Figure 3: Confirmatory factor analysis of the TDPDQ.

Figure 3), a significant Chi-square value was obtained, $\chi 2$ (279) = 642.24; p < .001. Other fit indices such as CMIN/DF = 2.30 < 3.00 (Kline, 2016); RMR = .07 < .08 (Bentler, 1992); SRMR = .03 < .08; RMSEA = .06 < .08 (Hooper et al., 2008); IFI = .95 > .90 (Perry et al., 2015); TLI = .94 > .90 (Byrne, 1994); CFI = .95 > .90 (Schumacker & Lomax, 2004); PNFI = .79 > .50; AGFI = .87 > .80 (Ma et al., 2021) reveal that the model has an acceptable goodness of fit. Furthermore, results of other fit indices such as NFI = .92 and RFI = .90 were also approaching the value of 1.00, which is a good sign of an acceptable model. Figure 3 also shows that all the variables loaded highly to respective latent factors in the range of .60 to .95.

Test of predictions/linkages

The model in Figure 1 was empirically tested using a bootstrapped path analysis in the family of structural equation modelling (SEM). Table 3 indicates that ULRMs significantly predicted teachers LP (β = .48, p < .001), UIM (β = .53, p < .001) and ID (β = .20, p < .001). Teachers' UIM significantly predicted their ID (β = .18, p < .001), CM (β = .12, p < .001) and CF (β = .07, p < .001). Also, teachers' LP had a significant direct effect on their UIM (β = .39, p < .001), CM (β = .19, p < .001), ID (β = .45, p < .001) and LE (β = .29, p < .001). Table 3 also showed that teachers' ID directly predict their CM (β = .40, p < .001), LE (β = .44, p < .001) and ULD (β = .10, p < .001). Furthermore, teachers LE was found to be a significant direct predictor of their CF (β = .24, p < .001) and ULD (β = .39, p < .001). Table 3 also proved that teachers' CM is direct significant predictor of CF (β = .20, p < .001) and ULD (β = .21, p < .001). Lastly, teachers' CF is significant direct predictor of ULD (β = .25, p < .001). There was a non-significant lesson evaluation (LE) prediction on classroom management (CM), leading to the removal of the path in Figure 4.

Figure 4 ULRMs is responsible for 23% (R2 = .23, 95%CI [.20, .27], p < .01) of the overall variation in teachers' LP. It was also discovered that 53% of the variance in teachers' ID (R2 = .52, 95%CI [.47, .55], p < .01) is explained by the joint prediction of the ULRMs, UIM, and LP. Also, Figure 4 reveals that 65% of the total variance in UIM (R2 = .63, 95%CI [.61, .66], p < .01) is explained jointly by the prediction of ULRMs and LP. Figure 4 further showed that 39% of the total variance in CM (R2 = .39, 95%CI [.35, .43], p < .01) is attributable to the joint contribution of ID, LP, and UIM. For LE as the response variable, Figure 4 shows that about 45% of the total variance in LE (R2 = .45, 95%CI [.40, .49], p < .01) is due to the composite contributions of ID and LP. Furthermore, predictors such as LE, CM, and UIM can be held accountable for 17% of the total variance (R2 = .17, 95%CI [.14, .21], p < .01) in CF. Lastly, 53% of the total variation in ULD (R2 = .53, 95%CI [.49, .56], p < .01) is attributed to the joint prediction of ID, LE, CM and CF. These results imply that other predictors might account for the remaining 77%, 47%, 35%, 61%, 55%, 83%, and 47% of the variance in LP, ID, UIM, CM, LE, CF and ULD, respectively.

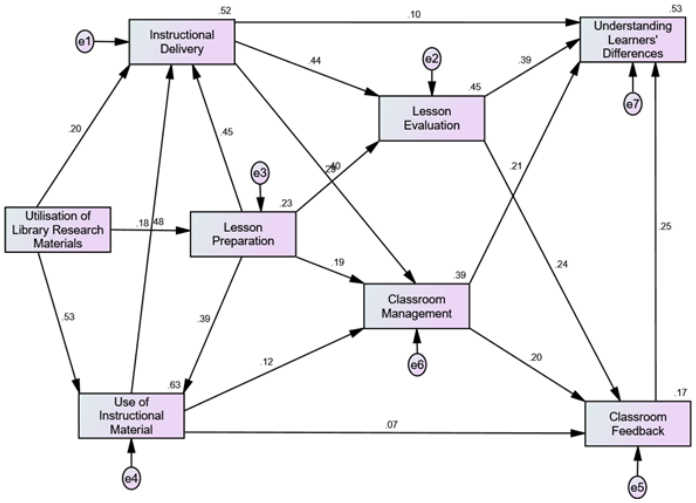

Figure 4: Path analytic model of the direct and indirect effects of the predictors on their response variables.

Regarding the mediation analysis, our analysis in Figure 4 revealed that teachers' ULRMs have a significant indirect effect (β = .19, p < .01) on their UIM, with LP mediating the association. Teachers' ULRMs also have a significant indirect effect (β = .34, p < .01) on their ID, with LP and UIM mediating the nexus. Teachers' ULRMs have a significant indirect effect (β = .39, p < .01) on their CM, with their ID, LP, and UIM being the mediators. Also, there is a significant indirect effect of teachers' ULRMs (β = .38, p < .01) on their LE, with LP, UIM and ID mediating the relationship. Teachers' ULRMs has a significant indirect effect on their CF (β = .22, p < .01) and ULD (β = .34, p < .01), with factors such as their ID, LP, UIM, LE and CM mediating both linkages.

Table 3: Direct effect of the predictors on their response variables.

Path			*B*	β	*95% CI*	*z*
LP	<---	ULRMs	.45	.48[i]	.44, .52	27.03
UIM	<---	ULRMs	.47	.53[i]	.49, .57	37.72
ID	<---	ULRMs	.19	.20[i]	.14, .26	9.84
ID	<---	UIM	.18	.18[i]	.12, .24	7.53
CM	<---	UIM	.11	.12[i]	.07, .16	5.28
CF	<---	UIM	.08	.07[i]	.03, .12	3.32
UIM	<---	LP	.38	.39[i]	.35, .43	27.73
CM	<---	LP	.18	.19[i]	.14, .25	8.25
ID	<---	LP	.45	.45[i]	.40, .50	24.17
LE	<---	LP	.29	.29[i]	.24, .34	14.32
CM	<---	ID	.37	.40[i]	.34, .45	17.64
LE	<---	ID	.44	.44[i]	.38, .49	21.68
ULD	<---	ID	.10	.10[i]	.05, .16	4.85
CF	<---	LE	.23	.24[i]	.19, .29	11.18
ULD	<---	LE	.37	.39[i]	.33, .44	20.92
CF	<---	CM	.21	.20[i]	.15, .25	9.20
ULD	<---	CM	.21	.21[i]	.16, .26	11.71
ULD	<---	CF	.25	.25[i]	.21, .30	16.47

Notes: [i] = Significant at p < .001
URLMs = Utilisation of library research materials; LP = Lesson preparation; UIM = Use of instructional materials; ID = Instructional delivery; LE = Lesson evaluation; CM = Classroom management; CF = Classroom feedback; ULD = Understanding learners' differences.

Figure 4 demonstrated that teachers' LP has a significant indirect effect (β = .07, p < .01) on their ID, with the relationship mediated by their UIM. Teachers' LP significantly indirectly predicts their CM (β = .25, p < .01), with the link being mediated by their ID and UIM. Figure 4 also shows that teachers' LP has a substantial indirect effect (β = .23, p < .01) on LE, with their ID mediating the relationship. It was also revealed that teachers' LP significantly predicted their CF through an indirect effect (β = .24, p < .01), with the mediating variables being ID, UIM, LE and CM. Teachers' LP has a significant indirect effect (β = .41, p < .01) on their ULD, with the mediators being ID, UIM, LE, CM, and CF.

Teachers' UIM has a substantial indirect prediction of their CM (β = .07, p < .01) and (β = .08, p < .01) LE with the connection being mediated by their ID. Teachers' UIM also had a significant indirect contribution (β = .06, p < .01) to their CF, with ID, LE and CM mediating the link. Furthermore, Figure 4 depicts that teachers' UIM has a significant indirect effect (β = .12, p < .01) on their ULD, with ID, LE, CM and CF mediating the nexus. Figure 4 also indicates that teachers' ID has a significant indirect effect on their CF (β = .19, p < .01) and ULD (β = .30, p < .01), with LE and CM mediating the connections. Teachers' CM has a significant indirect effect (β = .05, p < .01) on their ULD, through the mediation of CF. Lastly, teachers' CM (β = .05, p < .01) and LE (β = .06, p < .01) have significant indirect effects on their ULD, with their CF mediating the associations respectively.

Discussion

This study discovered firstly that teachers' use of library research materials (ULRMs) is an important predictor in their discharge of pedagogic duties such as lesson preparation (LP), instructional delivery (ID), and use of instructional materials (UIM). This implies that teachers with high use of library research materials such as journal articles, theses, dissertations, and conference proceedings, among others, tended to demonstrate a higher degree of effectiveness in LP, ID, and UIM. This result is attributable to the importance of research materials in school libraries documented in previous studies (Ness, 2011; Owan et al., 2022a; So & Song, 2018). The result also aligns with the finding of another study, which discovered that principals' management of diverse library materials enhanced teachers' pedagogic effectiveness in lesson preparation (Owan et al., 2021).

Secondly, this study found a significant direct effect of teachers' UIM on their ID, classroom management (CM) and classroom feedback (CF). This finding implies that secondary school teachers with good ID, CM and CF skills, to a significant extent, tended to use instructional materials in the teaching-learning process more. This result is not surprising because previous research has documented that using instructional material makes lessons practical (Abdulrahaman et al., 2020; Barnes et al., 2018). Since some instructional materials are interactive (Mamolo, 2019; Rice & Ortiz, 2021), students are more likely to display a high sense of focus, thereby promoting CM through students' attentiveness. In terms of CF, the result of this study demonstrated that teachers can engage learners more in classroom discussion, attend to their questions and offer practice-based guidance.

This study also proved that teachers' LP predicts their UIM, CM, ID and lesson evaluation (LE). This result implies that effective LP practices are associated with effective UIM, classroom control, quality teaching and effective LE. For teachers' UIM, the result of this study is attributed to the careful selection of lesson contents and learning experiences to be offered to students during the preparation process. Effective teachers often consider what, whom, when, where and how to teach when developing lesson plans. The instructional material that best conveys the lesson contents is decided during lesson preparation. Thus, it is no surprise that teachers can effectively utilise instructional materials, planning how to use them during LP. For CM, our result may mean that teachers who prepare their lessons effectively can decide the most suitable/appropriate instructional strategy to implement. This decision may assist them in developing effective CM strategies to shun disruptive classroom behaviour. This finding corroborates the evidence earlier presented by two studies that teachers who planned their lessons agreed to also plan for classroom management (Ali, 2021; Nkwabi, 2020). Regarding ID, our results clarify that teachers who are good at LP are more likely to deliver lessons effectively than those who are not. This result strengthens the finding of Hatch and Clark (2021) that teachers who make effective lesson plans can navigate their ways during the delivery process. The link between teachers' LP and LE is not a surprise because the latter is often decided in the former process. Poor LP may birth poor evaluation because planned objectives are often considered in the evaluation

process. This result agrees with a study from the Netherlands that a significant correlation exists between lesson planning and evaluation (Morsink, 2021).

This study also documented a significant direct effect of teachers' ID on their CM, LE and understanding of learners' differences (ULD). This result demonstrates that managing classes, evaluating lessons, and understanding students' learning needs are intensely tied to teachers' ID competence. The result is explainable because LE, CM and ULD are a part of the instructional process. Therefore, it may be challenging to say a teacher is good in ID without having these (LE, CM and ULD) skills. Furthermore, a good teacher can differentiate lessons to suit learners with different needs and paces during instructional delivery. This corroborates the position of other scholars that teachers should diversify classroom instruction to achieve differentiated instruction where students learn at their own pace and based on their needs (e.g., Parsons et al., 2018; van Geel et al., 2019).

Teachers' LE was a significant direct predictor of their classroom feedback and ULD. This suggests that being able to evaluate lessons is associated with being able to provide feedback to learners during classroom interactions. The study also showed that teachers' CM directly affects their CF. This also means that teachers who are good classroom managers are more likely to provide quality feedback than those with weak CM skills. The result is justifiable because effective feedback cannot be provided in a rowdy and disconnected environment. A serene classroom atmosphere is required for teachers and learners to communicate effectively. This supports the results of other studies that teachers effectively control their classrooms and can calm students down and communicate with them (Haydn, 2014; Jones et al., 2014). The current study also showed that classroom feedback is necessary to understand learners' differences. This evidence is not shocking because CF involves a two-way interaction between teachers and learners. Through this interaction, a good teacher can identify brilliant from average and dull learners, enabling him to tailor lessons to meet diverse needs.

This study documented that teachers' LP significantly mediated the link between their ULRMs and UIM. This result is because the process of LP can allow teachers to decide on the instructional material from the library to use. Furthermore, secondary school teachers may not choose suitable instructional materials from the library without proper lesson planning. This strengthens the position of other scholars that the lesson-planning process underpins all other instructional processes (Fujii, 2019). The current study also yielded a significant mediation effect of LP and UIM in the relationship between teachers' URLMs and their ID. This implies that merely using research materials in libraries cannot promote teachers' instructional delivery unless they are used to prepare lessons and as instructional materials. Since the library houses several instructional materials (Ojobor et al., 2020; Dane, 1963; Calzada & Foote, 2021), teachers can access these resources to plan their lesson delivery. This could explain the result of the mediation effect of LP and UIM on the link between ULRMs and ID. The present study also found that teachers' ULRMs connected significantly to their CM and LE through ID, LP and UIM. Using research materials can promote classroom management and evaluation, depending on teachers' lesson preparation, instructional effectiveness, and instructional material used. It was further revealed that ID, LP, UIM, LE and CM significantly mediated the effect of teachers' ULRMs on their classroom feedback (CF), respectively. These results suggest that library research materials can improve teachers' classroom feedback through instructional delivery, preparation, instructional material use, evaluation, and classroom management.

Conclusion

This study used a path analytic framework to analyse the direct and indirect effect of teachers' use of library research materials on seven pedagogic duties in secondary schools. The direct and indirect effects of various pathways were analysed among the pedagogic duties of teachers. Various significant predictions were uncovered, such as teachers' use of library research materials on lesson preparation, instructional material, and delivery. Several significant mediation effects of different variables of teachers' discharge of pedagogic duties were established by linking different variables. This study is helpful for policy, research and practice. The results of this study have been able to close several gaps previously in existence. The study has quantified and empirically proven that teachers' use of library research materials is crucial for the instructional process. It serves as the information bank in schools and as a source of instructional materials to enable educational practitioners to plan and deliver practical lessons. The linkages among the different pedagogic duties address several important research gaps, such as lesson planning and instructional delivery, preparation and evaluation, classroom management and feedback, and several others with scarce literature. This study is critical for teachers because it might enable them to understand the connections between lesson planning, delivery, and evaluation. This will improve their instructional practices by focusing on the most meaningful pathways of specific pedagogic practices. This study bridges another gap in teachers' job performance literature which has been too general among many previous teacher development studies. Lastly, the study has developed and standardised two measuring instruments with acceptable psychometric properties for further research into teachers' classroom practices.

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Appendices

Appendix A: Utilisation of library research materials scale (ulrms).

Dear respondent,

The essence of this questionnaire is to elicit information on the degree to which you research materials in the library. This data collection process is for an academic exercise, and participation in the study is voluntary. You are also free to exit the exercise at any point in time. We promise to treat your responses with high confidentiality and to only use the aggregated results for decision-making and publication purposes. Providing your personal data is optional; they will never be made public where they are provided. Kindly feel free and secure to provide accurate information to the best of your knowledge. Having read these conditions, you must provide written informed consent by ticking the box below.

☐ **I consent to participate in this study, having read and understood the implications of participation. I also consent to have my personal information used to achieve the study's objectives in a confidential manner.**

Section A: Personal Data

Age (in years): _____

Sex: Male [ ]; Female [ ]

Religion: _____

Marital Status: Single [ ]; Married [ ]; Other (please specify): _____

Highest educational qualification: NCE/OND [ ]; Bachelor's [ ]; Master's [ ]; Doctorate [ ]

Years of work experience: Less than 5 years [ ]; 5 – 9 years [ ]; 10 – 14 years [ ]; 15 – 19 years [ ]; 20 years and above [ ]

Section B: Utilisation of library research materials

Instruction: You are required to indicate the frequency at which you use the following library research materials using the scale provided in the table below.

S/N	Items	Never	Rarely	Sometimes	Often	Always
1	Dissertations and theses					
2	Electronic books (e-books)					
3	Electronic conference proceedings					
4	Electronic journals (e-journal)					
5	Printed Journals					
6	Book of abstracts					
7	Government Reports					
8	Reference books					
9	Textbooks					
10	Monographs					

Appendix B: Teachers' discharge of pedagogic duties questionnaire (TDPDQ).

Dear respondent,

The purpose of this questionnaire is to obtain information on the teaching-related practices of your classroom teacher. The data collected about your teacher will not be used to reward or punish him/her; it is just a research exercise aimed at improving our educational system. Therefore, feel free to provide only truthful information about your class teacher to promote quality research findings and conclusions. Please note that participation in the research is optional; you may also decide to opt out of the exercise at any stage. We pledge to keep your replies private and only use the aggregated data for decision-making. The result that will be obtained may be published in a peer-reviewed journal. Furthermore, sharing your personal information is optional; if you do, it will never be made public. Please feel free and safe to provide accurate information to the best of your ability. After reading these terms and conditions, you must offer written informed permission by checking the box below.

☐ **I agree to participate in this research after reading and comprehending the consequences of doing so. I also agree to have my personal information used discreetly to achieve the study's aims.**

SECTION A: PERSONAL DATA

Age (in years): _____

Sex: Male [ ]; Female [ ]

Class: _____

SECTION A: LIKERT SCALE

Instruction: Kindly indicate the extent to which you agree or disagree with the following statements concerning your classroom teacher. In the table below, you will find response options such as SD, D, N, A, and SA. The meaning of each abbreviation is provided in the key below for your guidance and use.

KEY

SD = Strongly Disagree

D = Disagree

N = Neutral/Neither agree nor disagree

A = Agree

SA = Strongly Agree

S/N	Items My class teacher…	SD	D	N	A	SA
DPD1	knows all the slow/fast learners in my class					
DPD2	checks for understanding by randomly calling on different students to answer his/her questions					
DPD4	presents lesson contents from his notes					
DPD5	only reads course materials from only textbooks					
DPD6	regularly monitors each student's progress after each lesson					
DPD7	states the objectives of each lesson clearly					
DPD8	adjusts the tempo of his/her instruction at a pace that meets almost every student's needs					
DPD9	asks questions about previous experiences related to lessons before he begins each class					
DPD10	gives students increasingly more challenging tasks to perform after successfully completing previous ones					
DPD11	comes to class with already prepared notes					
DPD12	presents all lessons from his/her head without any note					
DPD15	delivers instruction that matches all students' needs					
DPD18	provides all continuous assessment reports to students					
DPD20	uses praises to appreciate all correctly answered questions by every student					
DPD21	diversify his methods for learners with different forms of learning disability					
DPD23	provides answers to all students' questions asked while teaching					
DPD25	always uses materials that are very relevant in making me understand his/her lessons					
DPD26	makes sure that every student maintains a high sense of focus while delivering lessons					
DPD27	organises his classroom in a way that allows him/her to pass freely to every student's desk					
DPD28	makes it almost impossible for his/her class to be rowdy					
DPD30	offers students opportunities to practice his/her instruction at their own pace					
DPD31	ensures strict discipline of all disruptive behaviours in my class					
DPD33	encourages students to use assessment results for further learning/improvement					
DPD36	uses pictures/videos to demonstrate each of his/her lessons					
DPD37	sometimes improvise using locally-sourced materials to illustrate his lessons					
DPD39	often teach with real-life objects for clarity					