Development and Standardization of the Scale for Assessing School Heads Instructional Supervisory Behavior (SHISB) in Tanzania Secondary Schools

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Abstract: *This article informs, empirically, the procedures for developing a validated scale for assessing the school heads instructional supervisory behavior. Based on a scrupulous literature review of the seminal works and models of instructional supervision, 14- valid items were grouped into four major dimensions and validated with the aid of Exploratory Factor Analysis (EFA). The reliability of the scale was determined by estimating reliability coefficient on a sample of 53 secondary school teachers who assessed their school heads. Both Cronbach's Alpha and Composite Reliability Coefficient were estimated to determine the reliability coefficient. The estimated reliability coefficients were 0.85 and 0.93 respectively. These coefficients were adequate for the scale. Besides, face validity was established by integrating the experts' and other practitioners' comments on the language ambiguity, vagueness and subjectivity. Further, content validity was established by evaluating the relevance of the items in relation to the concepts of different dimensions and the actual subject matter. Importantly, the construct validity in terms of convergent validity was also established. Eventually, the fitness of the school heads instructional supervisory behavior model was tested by using Confirmatory Factor Analysis (EFA) with Structural Equation Modeling and confirmed that the school heads' instructional supervisory behavior scale can be used in Tanzania school context.*

Keywords: *Instructional Supervisory Behavior, Confirmatory Factor Analysis, Exploratory Factor Analysis, Structural Equation Modeling,*

1. INTRODUCTION

A number of scholars have in common agreed that supervision of instruction is significant to students' learning (Kindiki & Ongori, 2015; Ibrahim & Gavifekr, 2014) and has also more significant impact on teachers working effectiveness (Borney & Heaven, 2016). Providing a more particularized example, Haastrup (2013) echoed that, through an effective supervision of instruction, a school head can reinforce and enhance teachers' teaching practices which will be bringing out the students learning (Haastrup, 2013). Therefore, effective instructional supervision is basically concerned with supporting and assisting teachers to improve instruction by changing their behaviors. When a school is perceived as a poor performer, the underlying effect is that of the poor supervision which does not embrace the idea of developing instructional delivery modes in such institution. This perhaps happens when a school head is incompetent. It is the head of the school who sets the pace, leading and motivating the staff and pupils to perform to their highest potential (Nasongo & Musungu, 2018). This notion is also congruent to the idea of Anike, Ayiene and Mercy (2015); Mumo, Kadenyi and Kibossi (2015) who have reiterated that, without an appropriate instructional supervisory behavior of school heads, the learning outcomes cannot be attained at the fullest.

Instructional Supervisory Behaviours (ISB) are those set of activities or practices which are carried out with the intention of developing teachers' potential towards fostering students' effective learning and academic success as a whole (Arhibong, 2008; Nzambi, 2012; Ekyao, 2014; Akwu, 2015). These practices include observation of the instructional performance of teachers, providing teachers with performance feedback and involving teachers in instructional performance improvement (Su, 2013; LunenBurg, 2010; Ogheneovo, 2013; Kolawole, 2014; Bourne & Heaven, 2016). In this sense, a school head as an instructional supervisor becomes an objective evaluator and powerful controller to check if teachers are indeed using the prescribed instructional methods in their classroom and, thus, take corrective measures (Kassahun, 2014). However, it was a great rhetoric that, do the school heads really practice these skills in their school? Further, assessing this rhetoric and bring out the fact is a more challenge

than any other task of the authority. Moreover, the dearth of efforts was found from the literature in this concern, except an attempt made by Ilgan, Kiran and Akram (2015) in Pakistan. Nevertheless, the available instrument was not a culture free and hence it is not suitable to the Tanzanian cultural context. Therefore, it was an urgent need of our times to develop and validate the scale that can assess the school heads instructional supervisory behaviors.

2. METHODOLOGY

The current study adopted a quantitative research approach involving a survey method as a data collection procedure. Basically, the hypothetical–deductive research design was employed to execute the current study, as it demonstrates the step-by-step process that deemed to be appropriate. The School Heads Instructional Supervisory Behaviour Scale (SHISBS) was developed and adapted based on the concept explored from the field as well as from the literature (Osman, 2013; Manaseh, 2016). Experts evaluation followed by a pilot study was carried out to ensure face and content validity in terms of the item and its sampling validity, as well as eliminate ambiguous expressions from the tool. Data were collected in Dodoma Region in Tanzania covering two districts, namely Chamwino and Dodoma Urban. With respect to this, 18 public secondary schools were purposively selected at first. Then, 53 teachers were randomly selected to inform the researcher about their heads' instructional behavior. Importantly, exploratory factor analysis by using principal component analysis technique was employed to bring out a standardized instrument for measuring school heads instructional supervisory behavior. Moreover, confirmatory factor analysis by using structural equation modeling was subjected to evaluate the overall fit of the hypothesized model (Byrne, 2001; Chua, 2009; Kline, 2005).

3. DEVELOPMENT OF THE SHISB SCALE

With respect to the School Head Instructional Supervisory Behavior Scale, the researcher first enlisted all the possible dimensions of instructional supervisory behavior after discussing with teacher educators, head masters and consulted various literatures (Archibog, 2008; Rogders, 2009; Osman, 2013; Manaseh, 2016). Subsequently, the scale was subjected to the experts concerned to get the dimensions and indicators finalized. Further, items pertaining to the specific domain of instructional supervisory behaiour were constructed and subjected again to the experts concerned to get their suggestions. Upon receiving suggestions from the experts, a questionnaire was revised and refined in terms of language ambiguity, vagueness and subjectivity. The overlapping of the items was also critically examined. In this way, the items/statements of instructional supervisory behavior scale were thoroughly screened, edited and prepared. After preparation of the items/statements of the questionnaire were subjected for a pilot study. The procedures for the same are as follow:

3. 1 Piloting the SHISB Scale

One of the most important steps in developing a tool is to pilot test it to ensure its effectiveness for the purpose it was developed (Saunders, Lewsis, & Thornhill, 1997; Creswell, 2005; Kho, Yusof, & Mohamad, 2015). Hence, the school heads instructional supervisory behavior scale developed for this study had gone through an intensive evaluation process (pilot study) before it was actually administered. In the initial stage of the pilot study, the suitability and relevance of the items with respect to each domain of the scale were assessed. For executing the second stage of the pilot study, 10 school heads were randomly selected for the administration of the scale. The responses of the instructional supervisory behavior scales were scored and the frequency of each item was calculated. Items to which 95 per cent and above of the sample, responded in the same, were discarded. In this way, 32 of 47 were retained after the pilot of instructional supervisory behavior scale. On the completion of the pilot study, some of the items were modified to suit the purpose. This stage is then considered as the second version. Finally, the second version was administered to a larger sample and the item analysis was conducted by using principal components analysis in order to reach the final version of the scale.

4. DESCRIPTION OF THE SHISB

Instructional supervisory behavior in this study refers to those micro skills which are practiced by the school heads to provide support for teachers and ultimately enhance their roles as the key professional decision makers in the course of teaching. In the context of this study, instructional supervisory behaviors are measured using four dimensions. These dimensions are *Pedagogical Supervisory Behavior (PSB)* which refers to the supervision of

teachers' pedagogical strength and weakness on the basis of which suitable intervention could be made to improve their limitations. *Motivational Supervisory Behaviour (MSB)*, are those micro behaviours which are exhibited by to motivate teachers to improve their teaching morale and students to increase their desirability of learning. *Resource Based Supervisory Behavior (RBSB)* refers to the supervision of instructional resources with a view to facilitate teachers' instructional practices. *Professional Competence Supervisory Behavior (PCSB)* is the supervisory practice which concerns with identification and provision of the instructional competencies needed by the teachers to fulfill their instructional roles effectively.

5. SCORING PROCEDURE FOR THE SHISB

School heads' instructional supervisory behavior scale includes both positive and negative items. The items are to be scored by five points Likert Scale. For scoring positive items 1, 2, 3, 4, and 5 was used to inform whether the respondents Strongly Dis Agree, Dis Agree, Un Decided, Agree, and Strongly Agree on the mentioned item. However, for scoring negative items; just reverse procedure can be followed.

6. ITEM ANALYSIS OF THE SHISB SCALE

This Likert–type Scale was administered to 53 public secondary school heads of Dodoma Urban and Chamwino District after the pilot study. Subsequently, scoring was done and subjected to item analysis with the intention of selecting more suitable/valid items for measuring the instructional supervisory behavior of secondary school heads accurately. The items formulated from different areas of heads supervisory behavior and the scale consists of four major dimensions as it has been mentioned above. Mainly, Principal Component Analysis (PCA) was used as a statistical technique to reach the final version of the scale. The result unveiled from the (PCA) is reported pre-decided dimension wise. *Pedagogical supervisory behavior* is measured by items 9,10,11,12 and 13. This dimension explained 23.65 percent variance and it has a total factor loading of 2.72. The correlation of this factor with total of the score was 0.80. The second dimension, i.e. *Motivational supervisory behavior,* was measured by items 3, 4, 5 and 8. This dimension demanded 17.10 percent variance with the total factor loading of 1.71. The correlation of this factor with the total score was 0.80. The third dimension, i.e. *Resource based supervisory behavior* was measured by items 1and 2. This factor accounted for 13.89 percent variance and a total factor loading of 1.12. The correlation with a total score was 0.65. The fourth dimension, i.e. *professional competence supervisory behavior* was measured by items 6, 7 and 14. This dimension explains 12.23 percent variance with a total factor loading of 1.37. The correlation of this factor with the total score is 0.72. Eventually, there are 14 items/statements which were retained to reach into the final version of the scale.

7. RELIABILITY OF THE SHISB SCALE

The reliability of the scale was established by estimating reliability coefficient on a sample of 53 teachers. The Cronbach's Alpha reliability coefficient for the whole scale is found to be 0.85 while the composite reliability coefficient came out to be to 0.93. These reliability coefficients can be considered adequate for the scale.

8. VALIDITY OF THE SHISB SCALE

Validation of this scale was undertaken by considering experts' comments and reference of different literatures. For this, the scale was given to the senior teacher educators, school heads and other experts in this field. According to their comments, the items were framed for ensuring the face validity, as well as adequate and appropriate representations of the contents. Again, the content validity of the instructional supervisory behavior scale was established by evaluating the relevance of the items in relation to the concept of different dimensions and actual subject matter studied. This was, as well, complemented by creating a sampling of the items with respect to the domain of measurement. Thus, the construct validity in terms of convergent validity was established. The established validity coefficient was 0.50.

9. NORMS FOR THE SHISB SCALE

In order to establish the norms, 53 public secondary school heads raw score were obtained and converted into Stanine Scale by organizing them in the frequency distribution and giving the percentage of each Stanine Score points according to the normal distribution curve. The first Stanine includes first 4 percent of the total cases, the

second Stanine includes next 7 percent, third Stanine covers subsequent 12 percent and fourth Stanine includes further 17 percent, the middle or fifth Stanine includes middle 20 percent, sixth Stanine covers 17 percent, seventh Stanine includes next 12 percent, eight Stanine includes 7 percent and the top or ninth Stanine covers 4 percent of the total cases. This manner, norms for interpreting the raw scores are fixed with the help of Stanine grade. As per the estimation of the Stainine norms, Stanine 1, 2, 3and 4 indicates Incompetent instructional supervisory behavior, Stanine 5, 6, and 7 indicates competent instructional supervisory behavior, and Stanine 8 and nine, show very competent instructional supervisory behavior. The norms were regarded as reference points for interpreting the head teachers' instructional supervisory behavior scores. It is on the basis of this categorization form where the interpretation is made. Therefore, the head teacher with high score is considered to have a high level of instructional supervisory behavior, and is likely to be a high performer and vice versa. Finally, for the better understanding of the score range, Stanine Grade and interpretation of the scores are presented in Table 1.

Table 1:

S/N	Score Range	Stanine Grade	Interpretation
1.	16–18	1	
2.	19–22	2	
3.	23–27	3	Less competent
4.	28–30	4	
5.	31–35	5	
6.	36–41	6	Competent
7.	42–46	7	
8.	47–54	8	
9.	55–58 & Above	9	Very competent

The Measurement Model (CFA) for the School Heads Instructional Supervisory Behaviour

The measurement model was used to assess the items' internal consistency. With regards to this, both un-standardized estimates and standardized parameter estimates are provided in Table 1 and Figure 1 respectively. Categorically, three measurements for the goodness of fit (GOF) indices – root mean square error of approximation (RMSEA), the goodness of fit index (GFI) and incremental fit index (IFI) were adopted.

Table 2: *The Un-standardized Regression Weights of the Fitted CFA Model*

Exogenous	Indigenous	Estimate	S.E.	C.R.	P- Value
Q1	PSB	0.401	0.076	5.304	<0.001
Q2	PSB	0.685	0.115	5.946	<0.001
Q3	PSB	0.558	0.117	4.783	<0.001
Q4	PSB	0.668	0.1	6.676	<0.001
Q5	PSB	0.439	0.096	4.558	<0.001
Q6	MSB	0.421	0.092	4.548	<0.001
Q7	MSB	0.597	0.12	4.965	<0.001
Q8	MSB	0.333	0.09	3.684	<0.001
Q9	MSB	0.567	0.134	4.24	<0.001
Q10	RBSB	0.376	0.158	2.375	0.018
Q11	RBSB	0.727	0.207	3.503	<0.001
Q12	PCSB	0.861	0.151	5.699	<0.001
Q13	PCSB	0.945	0.167	5.642	<0.001
Q14	PCSB	0.405	0.129	3.148	0.002

It can be seen from the table above that the pedagogical supervisory behaviour dimension is comprised of q1 (p<0.001), q2 (p<0.001), q3 (p<0.001), q4 (p<0.001) and q5 (p<0.001). The significant value indicates that these items influence, significantly, the pedagogical supervisory behaviors. On the other hand, the variability in q6 (p<0.001), q7 (p<0.001) and q8 (p=0.003) are significantly caused by motivational supervisory behaviours. Similarly, the dimension of professional competence supervisory behavior was significantly influenced by the q12 (p=0.003), q13 (p=0.003) and q14 (p=0.002). Besides, the resource based supervisory behavior dimension had

been influenced, significantly, by q10 and q11 with (p-value = 0.018) and (p-value <0.001). Moreover, the standardized parameter estimates depicted in Fig. 1.
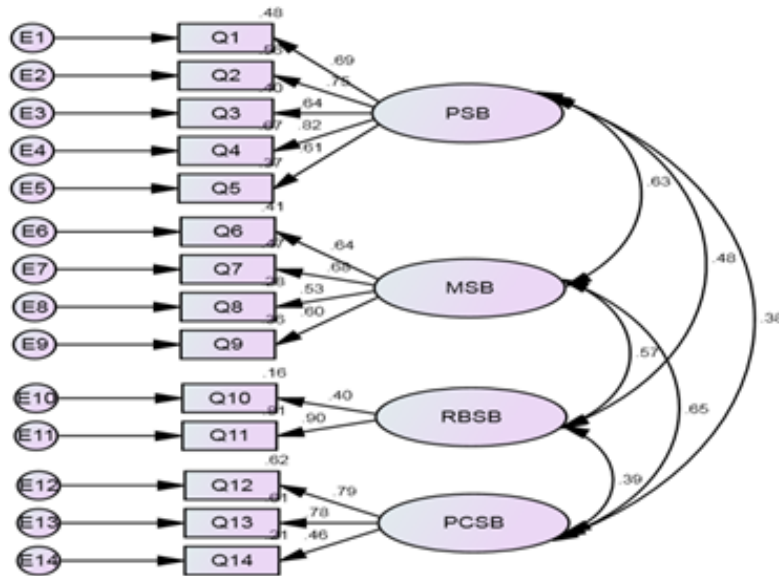

Figure 1: The Final Measurement Model for SHISB Construct

The square of the standardized parameter estimates in Figure 1 unveiled that the percent of variance in a given indicator variable is explained by its latent variable (factor). With respect to this, the construct pedagogical supervisory behavior accounts for 48 per cent of the variance in q1, 56 per cent in q2, 40 per cent in q3, 67 percent in q4 and 37 per cent of the variability in q5. The variability in q6, q7, q8 and q9 explained by the construct motivational supervisory behaviour was 41 per cent, 47 per cent, 28 per cent and 36 percent respectively. Similarly, the variability in q12, q13 and q14 explained by the construct professional competence supervisory behavior found to be 62 per cent, 61 per cent and 21 per cent correspondingly. Moreover, the construct resource based supervisory behavior accounts for 16 per cent for q 10 and 81 per cent for q11.

Eventually, the estimated measurement model fit indices showed that the RMSEA was 0.69, which was above the recommended limit of 0.05. Besides, the GFI (0.79) and IFI (0.80) of the model met the requirement estimates. Therefore, the current measurement model is moderately fit, as the tests of goodness of fit indices were above the recommended value. The final version of the instrument is presented here under.

S/N	ITEMS	SDA	DA	UD	A	SA
1	My head holds classroom observation in each subject to assess the teaching-learning process	[ ]	[ ]	[ ]	[ ]	[ ]
2	My head assists in developing and selecting instructional materials	[ ]	[ ]	[ ]	[ ]	[ ]
3.	My head encourages teachers to use participatory methods of teaching	[ ]	[ ]	[ ]	[ ]	[ ]
4.	My head communicates to teachers about new development in teaching	[ ]	[ ]	[ ]	[ ]	[ ]
5.	My head communicates with teachers about any instructional concerns	[ ]	[ ]	[ ]	[ ]	[ ]
6.	My head likes to conducts in-service training for teachers	[ ]	[ ]	[ ]	[ ]	[ ]
7.	My head encourages teachers to attend professional development programs conducted at any place	[ ]	[ ]	[ ]	[ ]	[ ]
8.	My head praises the teachers in front of their peers for the good instructional work	[ ]	[ ]	[ ]	[ ]	[ ]
9.	My head encourages discipline master to take measures for effective students' discipline	[ ]	[ ]	[ ]	[ ]	[ ]
10.	My head analyses students' test scores to discover instructional strength and weakness	[ ]	[ ]	[ ]	[ ]	[ ]
11.	My head encourages coaching relationships among teachers	[ ]	[ ]	[ ]	[ ]	[ ]
12.	My head works very closely with teachers to identify learning difficulties as well as needs of students	[ ]	[ ]	[ ]	[ ]	[ ]
13.	My head advices teachers to keep students performance records	[ ]	[ ]	[ ]	[ ]	[ ]
14.	My head likes to demo the innovative instructional strategy to teachers	[ ]	[ ]	[ ]	[ ]	[ ]

10. CONCLUDING REMARKS

Instructional supervision performs a vital role in determining teachers working effectiveness and students' effective learning (Ibrahim & Gavifekr, 2014; Kindiki & Ongori, 2015; Borney & Heaven, 2016). In Tanzania perspective, the school heads are considered as instructional supervisors (MoEVT, 2011); however, little is known of the existence of an appropriate instrument that can assess instructional supervisory skills or the practices demonstrated by head teachers in their local context. Therefore, this study came up with a standardized scale that could be used to assess SHISB particularly in Tanzanian context. However, a word of caution is necessary with regard to the development of any research instrument. In academic honesty and objectivity, the researcher admits that the process of standardization of the tool is not followed to the highest levels of its expected rigor, although, most of the necessary steps are adhered to yield valid and reliable tool for measuring secondary school heads instructional supervisory behavior.

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