

Development of Teaching Perspective Rating Scale for Teachers in Osun State Secondary Schools

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Abstract

The study developed a scale for measuring teaching perspective of teachers and determined the construct validity and reliability of the scale. The sample consisted of 600 teachers which were selected from the three senatorial districts of the state using multi-stage sampling. An instrument, Teaching perspective scale (TPS) consisting of an initial set of 60 items was self-constructed. After review and moderation, the items were reduced to 44. These were subjected to the psychometric procedures of scale means, item total correlation and Cronbach Alpha if – item deleted. This led to a further reduction in the items. The final scale items were subjected to principal component analysis and other psychometric tests. Internal consistency and test–retest reliability investigations were also conducted. The results showed that the 44- item TPS was reduced to 35 items after the psychometric procedure of item retention and deletion were applied. Scree plot and eigen value methods showed that the final TPS construct validity had five factors of teaching perspectives (transmission, developmental, apprenticeship, nurturing and social reform perspective) that accounted for 99.5% of the total scale variance and it significantly converge with the Teacher Efficacy Scale ($r = 0.89$). The internal consistency reliability of the scale was 0.89 (Guttman), 0.90 (Cronbach), and 0.551 (Spearman), $p < 0.05$. The study concluded that the teaching perspective scale developed in this study had adequate psychometric characteristics and was suitable to measure the teaching perspective of secondary school teachers in Osun State.

Introduction

When teachers and students communicate, there are assumptions that both parties understand each other and assumptions about what is meant by the way information, concepts and content are communicated. These assumptions can be based on the individual actions, beliefs, and intentions that we, as teachers bring to the teaching and learning environment. This beliefs, actions, motivation and intention in relation to the manner in which one conceives the context of learning is known as teaching perspective. (Pratt & Collins, 1998). Also, teaching perspective is defined as what we do as teachers and why we think such actions are worthy and justified. Teaching perspective gives shape and meaning to educational practice. The way in which we plan instruction, the manner in which we engage students, the elicitation strategies we employ, our consideration of the social milieu in which learning take place, the assessment strategies we draw upon reveal our understanding of what constitutes knowledge, and our sense of the relationship between the knower and the known. Therefore, teaching perspectives are important in any explanation of pedagogical practices that teachers employ in their interaction with their students.

For teaching and learning to take place, there are activities that the teacher has to perform in the classroom and outside the classroom in order to provide the required learning experiences to students. Some of these are planning for the class, preparing the necessary learning materials, giving demonstration. All these comprise teaching activities. Teachers view teaching from different perspectives in order for learning to take place. Hence, one may say that teaching is what the teacher does, not only for providing instructional experiences, but also for generating a climate conducive for learning and maintaining discipline. That is, teaching is what the teacher performs for the organizing of learning experiences as well as for providing the supporting climate necessary for effective learning. Teaching perspective here should not be confused with teaching styles. Teaching style is a product of our vision or philosophy of education and our practical responses to contexts and students.

Also, teaching styles represent those enduring personal qualities and behaviours that appear in how we conduct our classes. Although, many researchers have attempted to conceptually define and empirically document different perspective on teaching, their efforts have resulted in considerable agreement between and among the various attributes. Pratt and Collins (1998) will be used who distinctively gave five different perspectives on teaching. These include Transmission, Apprenticeship, Developmental, Nurturing and Social reform. Each of the perspective is a unique blend of beliefs, intentions, and actions. Yet, there is an overlap between them. Each perspective on teaching is a complex web of actions, intentions, and beliefs; each term creates its own criteria for judging or evaluating right and wrong, true and false, effective and ineffective. Perspective determines our roles and idealized self- images as teachers as well as the basis for reflecting on practice. Teachers who exemplify the Transmission perspective are assumed to have a high degree of mastery of subject matter. Effective transmission teachers make efficient use of class time, clarify misunderstanding, answer questions, provide reviews , summarize what has been presented, direct students to appropriate resources, set high standard for achievement, and develop objective means of assessing learning Pratt and Collins (2000).

Teachers who subscribe to the Apprenticeship perspective must reveal the inner workings of skilled performance and must now translate it into accessible language and an ordered set of tasks .Through the learning process, teacher's starts with simple and move to complex tasks. The role of the apprenticeship teacher changes as the learner masters content, so that the learner assumes more responsibility. The developmental perspective is founded on the notion that teaching is planned and focused from the learner's point of view .Effective developmental teachers understand how their learners think and reason and helping learners develop increasingly complex and sophisticated cognitive structures for comprehending the content . This is done by questioning learners in simple to more complex content and offering meaningful examples for the learner.

Teachers with the nurturing perspective make a long-term, hard, persistent effort to achieve what comes from the heart, as well as the head. Nurturing teachers feel that they can affect learners because students can succeed at learning if they give it a good try, their achievement is a product of their own effort and ability, rather than the benevolence of a teacher and their effort to learn will be supplied by their teacher and their peers. Finally, the Social reform perspective is focused on effective teaching that seeks to change society in substantive ways. Social reform teachers are concerned with the awakening of students to values and ideologies that are embedded in texts and common practices within their discipline. A greater understanding of teaching perspective is embedded in the understanding of commitment or the actions, intentions, and beliefs that frame each teaching perspective. Over the years, much research has shown surprisingly high levels of correspondence in identifying qualitatively different perspective on teaching which include; Transmission, Apprenticeship, Developmental, Nurturing, and Social reform. Effort has been made to conceptualize the five perspectives and translate them into items related to actions, intentions, and beliefs about teaching and learning. Researchers (Pratt, 2000; Powell 1992; Bellah 2008) in western countries have shown that people conceived teaching in ways that were remarkably similar to one or more of the five different perspectives on teaching while there may be a great variation in personal styles. Also, teachers need to reflect critically on the underlying assumption and values that give direction and justification to their work and for many teachers; this is not an easy task. What is it that one should reflect upon? How are the underlying values and assumptions to be identified? In other words, the objects of critical reflection are not self-evident. Indeed, it is something of a new twist to look not only at the world, but at the very lenses through which we view the world.

Teachers on their part strive to explore different methods to improve their teaching activities by creating a conducive environment for teaching and learning to take place, plan properly, provide effective instruction, improve the way in which information, concept and content are to be communicated and evaluate the learning using appropriate methods and techniques but neglect determining their teaching perspectives which in a way has effect on the success of teaching learning process. However, since there is no locally constructed scale in Nigeria for measuring the teaching perspective of teachers to the best knowledge of these researchers, it is the interest of the researchers to develop a scale that will be useful in measuring the teaching perspective of teachers in Osun State. Also, it is expedient to develop a scale that would be suitable for use among Nigerian teachers and within the context of Nigerian schools. Validity, reliability and usability are the most essential characteristics of measurement instruments, but the most important is validity. Reliability refers to the consistency of test results while usability refer to the practicality of the procedure involved in its use in terms of economy, money or time, care of administration, scoring and interpretation.

Reliability is a necessary but not a sufficient condition for validity, yet reliability intertwined with validity. Scores generally indicate the presence of a single theoretical construct. Validity refers to the appropriateness of the interpretation of the results of a measurement instrument for a given group of individuals, and is regarded as the most important consideration in assessment (Gordon, 1999). The American Psychological Association (1954) recognised four essentially different ways of defining validity. These were: content validity, construct validity, predictive validity. This was delimited in 1974 to only content, criterion related and constructs validity types. However, this position was reviewed in (1999) to reflect contemporary convergent scholarship on validity, which conceptualizes validity not as an intrinsic property of a test, but as reference to the inferences made on the test scores and as the unifying (Spector, 2006; Gronlund, 1985). In this concept for validity regard, validity is conceptualized (i) as a matter of degree, (ii) as specific to some particular use, and (iii) as a unitary concept. Thus, the traditional view that there are several “types” of validity has been discarded. Instead, validity is viewed as a unitary concept based on various lands of evidence. Murphy and Davidshofer (2005) noted that it is possible to include all validity research under the heading of construct validity since all research on the validity of tests and measures is difficulty concerned with constructs and that any validation strategy may ultimately help to establish the relationship between the test and the construct. As Gronlund (1985) observed, for many practical uses of tests, just one or two types of evidence may be necessary or appropriate, but the strongest care for validity can be made when evidence on the test content and its specifications, the relation of the test scores to other significant measures are present. A construct is some postulated attribute of people assumed to be reflected in test. Constructs exist in the theoretical sense, not in the literal or physical sense, nonetheless, behaviors that provide evidence of these constructs can be observed and measured. Construct validation is the extent to which a test measures some theoretical construct. Divergent and discriminate validity are both considered as subcategories or subtypes of construct validity. Keightley and Keighley-James (2001) stated that measures of constructs should theoretically be related to each other, in fact, observed to be related to each other; that is, show a correspondence or convergence between similar constructs. And, on the other hand, measures of constructs that theoretically should not be related to each other are, in fact, observed not to be related to each other; that is, should be able to discriminate between dissimilar constructs. Factor analysis (FA), (i.e. confirmatory FA) enables investigation of the underlying factors that a test is measuring. If the factors exist, then, this is considered good evidence of construct validity. The major objective of this study is to develop a valid instrument that is capable of measuring teaching perspective of secondary school teachers in Osun State. The specific objectives of the study are to:

- (1) Develop items for measuring the teaching perspective of Osun State secondary school teachers;
- (2). Determine the construct validity of the scale;
- (3). Determine the reliability of the scale;

Research Questions

The following research questions are raised to achieve the objectives of the study.

- a. What items would be adjudged to measure teaching perspective of teachers?
- b. What constructs comprise teaching perspective?
- c. What is the reliability of teaching perspective scale?

Method

The study adopted survey design. In this study data were collected from a sample of teachers in secondary schools using an instrument. The data was subjected to statistical analysis with a view to determining the suitability and appropriateness of the instrument to make inferences on perspective of teachers in their teaching in secondary schools. The population of the study comprised secondary school teachers in Osun State. The sample consisted of 600 teachers selected from 30 secondary schools in the state. From each of the three senatorial district of the state, two Local Government Areas (LGAs) were randomly selected to make a total of Six LGAs. From each LGA, Five secondary schools were selected using random sampling technique, and from each school, 20 teachers were randomly selected. The first scale designed for the study consisted of initial 60 items on different aspects of teaching perspective, which include transmission, developmental, apprenticeship, nurturing and social reform extracted from the literature review and teaching perspective inventory developed by pratt and Collins. These items were moderated and edited based on expert’s judgment. Based on the initial moderation, editing and expert of judgment, the initial 60- item scale was reduced to 44. The 44 items referred to as second version were then subjected to psychometric analysis.

The response format for the scale is from 'agree, strongly agree, neutral, disagree, strongly disagree. Furthermore, the instrument had a section that elicited information on respondents' personal data such as sex, teaching experience and subject specialization. The item means, of the 44 item was 3.267 while the inter-item correlation was 0.263 with a Cronbach Alpha coefficient 0.924. The reduction of the second TPS version was based on Govaerts and Gregoire (2008) item reduction criteria. The construct validity of the scale was determined using two methods, Kaiser or eigen values greater than one criterion (k1), (Kaiser1960) and Cartell's (1966) scree test.

Results

Research Question 1: What items could be adjudged to measure teaching perspective of Osun State secondary school teachers?

To answer this question, 60 items were constructed by the researcher. The items were moderated and edited based on expert judgment. The initial moderation, editing and expert judgment of the initial 60-item scale was reduced to 44. The 44 items were then subjected to psychometric analyses. The items of the second version were grouped into five factors as indicated in Table 1

Table1: The TPS Second Version Subscales and Corresponding Items

S/N	SUBSCALE	ITEMS
1	Transmission	1, 2, 3, 4, 5, 6, 7
2	Apprenticeship	8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 41
3	Developmental	18, 21, 22, 24, 25, 33, 35, 42
4	Nurturing	19, 20, 23, 26, 27, 31, 32, 37, 38
5	Social Reform	28, 29, 30, 34, 36, 39, 40, 43, 44

The item means, of the 44 item was 3.267 while the inter-item correlation was 0.263 with a Cronbach Alpha coefficient 0.924. The reduction of the second TPS version was based on Govaerts and Gregoire (2008) item reduction criteria which stipulated that any item affected by the three or any two of the conditions below should expunged

- i. Items with Low Item Mean (LIM) 3.197 or less.
- ii. Items with Low Item total Correlation (LITC) of 0.204 and below.
- iii. Items having a High Cronbach's Alpha if Item Deleted (HCAID) of 0.887 or more.

The application of the three conditions led to the removal of nine items from the 44-item version (i.e. second version) of the TPS. The breakdown of items that were affected is as presented on Table 2.

Table 2: Items Affected by Item Reduction Rules

Item	Mean	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	3.6070	.296	.886
2	3.5992	.295	.886
3	3.6031	.294	.886
4	3.6031	.297	.886
5	*2.0136	*.007	*.891
6	3.6070	.296	.886
7	*2.1187	*.048	*.890
8	3.4825	.398	.884
9	*2.9611	*.100	*.889
10	3.4825	.398	.884
11	3.4825	.398	.884
12	*2.6459	*.119	*.896
13	3.4825	.398	.884
14	3.4825	.398	.884
15	3.4883	.400	.884
16	3.4864	.399	.884
17	3.5681	*.102	*.894
18	3.6440	.445	.884
19	3.5370	.491	.883
20	3.5331	.486	.883
21	3.6440	.445	.884
22	3.6440	.445	.884
23	3.5370	.491	.883
24	3.6440	.445	.884
25	3.6440	.445	.884
26	3.5370	.491	.883
27	3.5331	.486	.883
28	*2.2529	.662	.878
29	*2.2529	.662	.878
30	*2.2529	.662	.878
31	3.5370	.491	.883
32	3.5389	.492	.883
33	3.6440	.445	.884
34	*2.2529	.662	.878
35	3.2471	*.203	*.889
36	*2.2529	.662	.878
37	3.5370	.491	.883
38	3.5370	.491	.883
39	*2.2529	.662	.878
40	*2.3191	.227	*.887
41	*2.4183	.276	*.889
42	3.2549	*.166	*.891
43	*2.2529	.662	.878
44	*2.2529	.662	.878

Table 2 showed that nine items (5, 7, 9, 12, 17, 35, 40, 41 and 42) were affected by the reduction rule and thus they were deleted from the TPS. After the removal of the nine items from the TPS, the remaining items as grouped into factors (subscales) were as presented in Table3.

Table 3: The TPS Third Version Subscales and Corresponding Items

S/N	SUBSCALE	ITEMS
1	Transmission	1, 2, 3, 4, 6
2	Apprenticeship	8, 10, 11, 13, 14, 15, 16
3	Developmental	18, 21, 22, 24, 25, 33
4	Nurturing	19, 20, 23, 26, 27, 31, 32, 37, 38
5	Social Reform	28, 29, 30, 34, 36, 39, 43, 44

Table 3 showed that while transmission subscale has 5 items, the apprenticeship has seven items and developmental has six items. Nurturing and social reform subscales has nine and eight items respectively. Finally, 35 items were retained on the TPS. Thus, the 35 items on Table 4 were considered suitable and adequate to measure teaching perspective of Osun State secondary school teachers.

Table 4: Teaching Perspective Scale (Third and Final Version)

S/N OLD	S/N NEW	STATEMENT	SA	A	N	SD	D
1	1	Learning is enhanced by having predetermined objectives					
2	2	Efficient use of class time is necessary to be an effective teacher					
3	3	Most of all learning depends on what one already know					
4	4	Objective means of assessing learning brings out the best in teaching and in learning					
6	5	A good teacher must have deep knowledge of the subject					
8	6	A teacher must develop reasoning skill					
10	7	Teaching should focus on developing changes in thinking					
11	8	Teaching should increase factual knowledge of student					
13	9	Teaching should be from the simple to complex					
14	10	Teaching should not only focus on teaching learners but transforming their identities					
15	11	Learning is facilitated when learners are involved in practical					
16	12	Learning will be better if project oriented assignments is used to teach the student					
18	13	Learning should be done in a way that students will have proper understanding of the subject matter					
19	14	Students should be encouraged in learning					
20	15	Students should be rewarded in learning					
21	16	Learning can take place in the absence of a teacher					
22	17	Teaching takes a lot of time					
23	18	Teacher must be able to recognize student's emotion					
24	19	Effective teachers must be an expert in their subject areas					
25	20	Teachers should teach in a way that students will have a permanent change					
26	21	Teachers should build in their students self confidence					
27	22	Teaching should build in students high self esteem					
28	23	Teaching should focus on societal change and not individual					
29	24	Individual learning without societal change is not enough					
30	25	Values should be given high priority when teaching					
31	26	Teaching should encourage expression of feelings and emotion					
32	27	Complimenting student's contribution enhances learning					
33	28	Teaching should challenge each other's thinking					
34	29	Instructional objectives should be linked to necessary changes in the society					
36	30	The ultimate goal of teaching is to create social change					
37	31	The dignity of learner should be promoted while teaching					
38	32	Teacher should be a model of emulation to their students					
39	33	Teaching should bring learner close to their society					
43	34	Teaching and learning should emanate from societal need					
44	35	Teaching and learning should make the students acceptable to society					

Research Question 2: Does the scale possess construct validity?

To answer this question, the construct validity of the TPS third version (final version) was determined using two methods. The first was Kaiser or eigenvalues greater-than-one criterion (K1), (Kaiser, 1960). The second was Cattell's (1966) scree test, which involves an examination of a plot of the eigenvalues for breaks or discontinuities. In doing these, the data was subjected to KMO test which yielded a value 0.84, indicative that the items were suitable for factor analysis. More so, the Bartlett's test of sphericity was significant at a chi-square value of 2157.21. An unweighted Least Square (ULS) procedure was then used (to investigate construct validity) because several items showed a skewed score distribution and a ULS procedure was the most suited for non-normal data (Nunnally & Bernstein, 1994). It was followed by an oblique rotation since the TPS subscales were hypothesized to be correlated (Perrin, Goetz, titz & Perry, 2002). Tables 5 and 6 presents eigenvalues greater-than-one criterion and standardized item loadings of TPS final version respectively.

Table 5: Eigen Values and Total Variance on the TPS

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	11.481	32.804	32.804
2	8.057	23.019	55.823
3	6.349	18.140	73.962
4	4.571	13.060	87.022
5	4.372	12.491	99.513
6	.064	.182	
7	.028	.081	
8	.020	.058	
9	.014	.041	
10	.011	.032	
11	.009	.025	
12	.007	.021	
13	.005	.014	
14	.004	.012	
15	.003	.009	
16	.002	.006	
17	.001	.004	
18	8.202E-016	2.343E-015	
19	3.203E-016	9.153E-016	
20	2.182E-016	6.235E-016	
21	5.622E-017	1.606E-016	
22	2.953E-017	8.438E-017	
23	1.375E-017	3.929E-017	
24	6.874E-018	1.964E-017	
25	3.071E-019	8.775E-019	
26	2.201E-019	6.287E-019	
27	-1.290E-034	-3.687E-034	
28	-1.146E-019	-3.274E-019	
29	-3.112E-019	-8.893E-019	
30	-7.737E-019	-2.210E-018	
31	-2.939E-018	-8.397E-018	
32	-5.301E-018	-1.515E-017	
33	-8.597E-018	-2.456E-017	
34	-8.055E-017	-2.301E-016	
35	-9.645E-017	-2.756E-016	

From the initial eigen values as presented in Table 5, five factors of teaching perspectives emerged, which accounted for 99.5% of the total scale variance on the TPS. The factor solution was in line with the initial assumption of the researcher (which was five).

Table 6: Standardized item Loadings of TPS (Final Version)

Item No.	Component				
	Nurturing	Societal Reform	Apprenticeship	Developmental	Transmission
1					.991
2					.983
3					.984
4					.988
5					.991
6			.990		
7			.982		
8			.986		
9			.989		
10			.989		
11			.990		
12			.985		
13				.974	
14	.980				
15	.978				
16				.969	
17				.974	
18	.984				
19				.974	
20				.974	
21	.984				
22	.981				
23		.999			
24		.999			
25		.999			
26	.984				
27	.982				
28				.974	
29		.999			
30		.999			
31	.984				
32	.984				
33		.999			
34		.999			
35		.999			

The standardized factor loadings for the 35 item presented in Table 6 were statistically significant at $p < .05$. Thus, the standardized item loadings of the TPS items showed that the instrument is valid. From Table 6, nine of the 35 items of the TPS loaded on factor 1 (Nurturing). It could therefore be concluded that nurturing is the most important of the factors. Eight items loaded on factor 2 (Societal Reform), which makes it next most crucial to the first factor on TPS. Seven items loaded on factor 3 (Apprenticeship), six and five items respectively loaded on each of developmental and transmission. Scree plot was also employed to further confirm the number of factors on which the TPS items would load. The plot is as presented in figure 1.

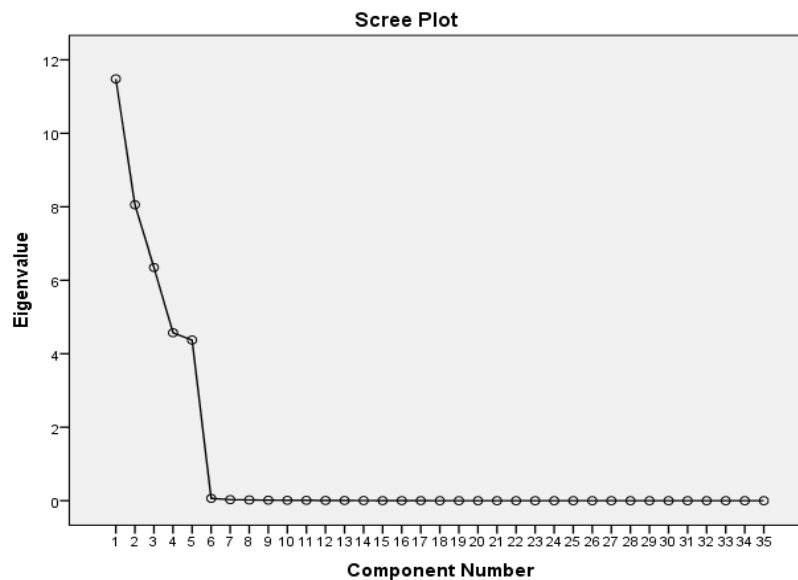


Figure 1: Scree Plot showing five Factors on TPS

The Scree plots in Figure 1 showed also five factors on the TPS and thus, confirm the number of factors in Table 6. Thus, there are five factors on the developed Teaching Perspective Scale (TPS) for teachers in Osun State secondary schools.

Research Question 3: What is the convergent validity of the TPS with Teacher-Efficacy Scale (SES)?

To determine the convergent validity, scores from the TPS were correlated with those from the TES, a related construct. Table 7 presents the result.

Table 7: Convergent Validity of TPS

Scales	N	\bar{X}	SD	Pearson Correlation	P
TPS	515	114.17	16.33	0.894	< .05
TES	119	82.83	9.34		

Table 7 showed a significant positive Pearson $r = 0.89$ correlation coefficients which indicates that TPS is convergent valid with TES.

Research Question 4: What is the reliability of the TPS?

To answer this question, the internal consistency reliability estimates of the TPS were obtained from analyses conducted on the third (final) version using SPSS (version 20).The result is as presented in Table 8.

Table 8: Internal Consistency Reliability Estimates of the TPS

Reliability Type	Coefficient	No of Items
Cronbach Alpha	0.926	35
Spearman Brown (Split-half unequal Length)	0.551	35
Guttman	0.899	35

The Cronbach Alpha coefficient of the TPS was 0.926, while the Spearman Brown (split-half unequal length) coefficient was 0.551 and the Guttman coefficient was 0.899. These results are psychometrically satisfactory as opined by Devells (1991) cited by Adewolu (2006). Thus the TPS can be considered reliable.

Discussion

The initial item generated for teaching perspective scale for teachers were initially 60 items. The items were later reduced to 44 items based on expert judgments. The 44 items were then subjected to psychometric analyses. The constructed and validated scale TPS gave rise to the final items on the scale.

Five factors of the teaching perspective emerged from the eigen value and also from the scree plot that was also employed to further confirm the numbers of factors on which the TPS will load. The five factors are Transmission, Nurturing, Developmental, Apprenticeship, and Social reform perspectives. The 35 item TPS developed in this study were found to be reliable and valid for the measurement of teaching perspective of teachers. From all these, it can be said that the TPS developed in this study had psychometric properties that are comparable with those of other psychological instruments (Moran and Hoy 2001).

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