Consolidating Goals of Service-Learning for Tertiary Technical and Vocational Education

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Abstract- Consolidating goals of service-learning in tertiary institutions offering Technical and Vocational Education is gaining acceptance in other part of the developing nations around the world. Despite experiential learning adoption in education, higher institutions of learning employ the use of such experiential learning without considering pertinent statistical methods to guide the selection of the goals that can guide the implementation of the experiential learning in practice. Hence, this study deployed a structural equation modeling (SEM) to consolidate the goals of service-learning for TVE in Nigeria. The study was guided by three research questions and one null hypothesis was tested at 0.05 alpha value. Descriptive survey design was employed for the study. A sample of two hundred and sixty seven (267) samples that comprised of lecturers and administrators were randomly selected from fifteen tertiary institutions. Goals of service-learning in technical and vocational education questionnaire' (GOSLITVEQ) that comprised of 15 items was used for data collection. A reliability coefficient of 0.83 was obtained for the questionnaire using Cronbach's Alpha statistic. Structural equation modelling (SEM) specifically, the confirmatory factor analysis (CFA) was employed for data analysis using Analysis of Moment of Structure (AMOS). The finding revealed eight goals of service-learning that were deemed relevant for implementation in TVE. Based on the finding, the paper recommends eight goals of service-learning to Nigerian tertiary education institutions offering TVE for implementation of service-learning.

Keywords- Service-Learning, Technical and Vocational Education, Structural Equation Modeling

I. INTRODUCTION

Structural equation modeling is among the strong and reliable method of analysis that are currently in use as a platform to describe symbiosis relationship between latent and observe variables of research. The used of SEM have been dwelled in numerous fields of social sciences including education. SEM platforms have wide acceptance among researchers due to its convenience in usage and precision in providing symbiosis association between construct variables of interest in a research. SEM usually suggest degree of fitness of the observe variables belonging a specified latent variable in a model. Fit refer to the ability of the model to reproduce the data (usually the variance covariance matrix). A good fitting model of a latent variable is the one that is reasonably consistent with the data and does not necessarily need further reassessment (re-specification). Again, a good fitting measurement model is needed before final interpreting the causal paths of the model. However, the assessment of model fit in SEM has previously remained an issue of discussion in SEM application [1 2 3]. Subsequently, there have been some consensus developments for definite cut-off criteria

of SEM fit indices assessment [4] and [5]. For this reason, up to now, SEM is tremendously being use as a reliable statistical tool of analysis in numerous educational disciplines.

Despite the tremendous contributions of SEM statistic there has been less evidence about it application in TVE particularly, in setting the goals of experiential learning approach. However, current experiential learning approach (internship or industrial training) has been criticized for having less important desired goals [6 7]. The conventional student's industrial work experience scheme (SIWES) in TVE was designed with a narrowed focus, structured mostly by novices and few teachers through classroom discussions. In addition, SIWES goals were consolidated without considering research evidences; however, from the ideas of claimed TVE practitioner as at the time TVE came to existence in Nigeria during the late 1970's and in the early 1980's. Beside, these goals were developed without a reliable statistical analysis and considerations [8]. Furthermore, service-learning that is current accepted of having sound academic reputations of providing TVE students the chance to acquire the deserve caliber of skills

needed in the 21st century world of work could indeed be the best experiential learning approach to be employed and practice in TVE.

Instructing students through experiential learning platforms in TVE pave way for students to demonstrate the skills they learn in the classroom [9]. Indeed, experiential learning approach is considered as part and parcel in any well designed TVE program. In Nigeria, the National Policy on Education has clearly vindicates the needs for an effective experiential learning approach [10]. In addition, even the UNESCO that is at the fore font of TVE development have demonstrates and gives cognizance to effective experiential learning as methods that can enable TVE students to see the interconnection between theoretical knowledge, practical knowledge and real life academic experience outside school [8 9 11]. Learning through practice is certainly an essential path in any well designed TVE. This could be achieved by adopting an effective hand-on-learning through diversification of numerous instructions; whether as method or credit bearing course in the curriculum.

Service-learning is an experiential pedagogy that is based on Kolb's experiential learning theory founded in the work of John Dewey Philosophy. In fact, several meanings of service-learning have been advanced in the work of authors. Although, the popular definition accepted by novices and experts researchers of service-learning includes the one that said "service-learning as a course-based credit-bearing educational experience in which students participate in an organized service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility [12 13]. Virtually, the concept of service-learning in this study adapts the meaning of these Authors; as an experiential education in which students could be engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development.

Researchers and experts of service-learning have lamented six major models for implementing service-learning in school, these are Problem-Based, Discipline-Based, Capstone Courses, Undergraduate Community-Based Action Research, Service Internships and extra course-based unit bearing [14 15 16] . In fact, these models were discussed intensively in the literature. The course-based unit bearing service-learning model is synonymous for the research; which mean student to register service-learning course as part of a program requirement as in the case of the conventional internship currently practice. Usually, students involve are pairs with the community members in a symbiosis relationship, meaning the students learn as they are serving in the community. Ideally, the service happens in reasonable percentage to the learning base on agreeable service-learning goal areas that are related to the curriculum [17 18]; which, for the students' learning

fallouts mainly from critical reflection [19 20]. Indeed, the reflection from the service-learning distinguishes service-learning from community service, volunteerism, as well as other forms of experiential learning for instance service-learning internships and cooperative education.

Higher education institutions in many part of the world including developed countries (United States, Canada, United Kingdom and many more) have achieved world-wide recognition in pursuit of three key missions: research, teaching, and service missions as valued by their stakeholders primarily in that order [21]. More specifically, it is unanimously inferred that teaching and learning is the primary aim of education; although policies, practices, and value statements often reflect other priorities. Most tertiary education institutions in Nigeria have cited these three primary missions most often articulated as noted earlier: research, teaching, and service. [22 6]. These Authors have clearly laments that experiential learning particularly the service-learning is certainly considered as instrumental for achieving these three cardinal missions of higher institutions through providing a clear focus that will greatly improve the work of the educational community.

Service-learning is one of the universal experiential learning pedagogy that was implemented in the curriculum of diverse educational fields such as sciences, engineering, environment managements, social sciences, social work and many more to facilitate the attainment of indices of teaching and learning, research and community service in higher education. Furthermore, these indices were included as a goal for the implementation of service-learning in the curriculum [9 23]. These goals serve as a plan for service-learning implementation. Generally, the implementation of service-learning as a unit bearing course in all fields of education in higher education particularly in the universities duly followed similar pattern where the goal of service-learning came from the teaching, research and community service mission of the tertiary academic institutions.

No doubt on the fact that the goals of service-learning focuses mainly to facilitate the attainment of the trilogy missions stipulated in the prospectus of high academic institutions of learning. This development cannot be unconnected to higher technical and vocational educational schools particularly in Nigeria. However, to the base of the researchers' knowledge, no direct historical analysis on the goal of service-learning for implementation in TVE appears in the literature. Hence, the purpose of this study is to consolidate the goals for the implementation of service-learning in TVE. The study concludes with a section that clearly laments the goodness of fit between service-learning and TVE.

Lastly, the study was organized under nine sections that comprised section I as introduction of the review, Section II contain the related work of the study, section II contains the research objectives of the study, section IV covers the research question that guided the study, section V entails

the null hypotheses of the study that was tested at 0.05 alpha value, section VI described the methodology of the study, section VII presents the data analysis and results of the study, section VIII contains the discussion of findings of the study and lastly, section IX was on the conclusion with recommendations of the study. Following.

II. RELATED WORK

Researches in service-learning theme have been in numbers for many decades up till now. For instance, a research work titled "A Meta-Analysis of the Impact of Service-Learning on Students" that determined the impact of service-learning on students in meta-analysis of 62 studies. The problem of the study was that in spite of the increased in acceptance of SL in education disciplines across the world, it is not clear what students' outcomes are related in SL courses; the study has 62 studies involving 11,837 students was done that reveals 5 outcomes as impacts of service-learning courses. These were: attitude toward self-engagement, attitude to learning and school, civic responsibility, social skills, and school performance. The result shows an effect mean size ranged from 0.27 to 0.43 [24]. Also, a study titled "Developing responsible global leaders through international service-learning programs: the Ulysses experience" was carried out to develop responsible global leaders through international SL programs in Ulysses. The problem of the study was on the basis of the challenges faced in executive education program's needs to train responsible global leaders. An integrated SL program that involves taking participants in group to developing countries to partake in SL with NGOs, social entrepreneurs and international organization in order to know how Ulysses participant learn while abroad; 70 participants and documented content analyzed of their learning experience was produced. Evidence of 6 areas of global leadership was found: ethical knowledge, responsible mind-set, self-development, cultural intelligence, and community building. The findings of the survey shows long-term effectiveness of the project in developing critical competencies for responsible global leadership [25]. Another study named "Development of a Service-Learning Program for First-Year Students Based on the Hallmarks of High Quality Service-learning and Rigorous Program Evaluation" that aims at developing a SL program within the six (6) areas (integrated learning, community service, collaborative development and management, civic engagement and a sense of community responsibility, civic engagement and a sense of community responsibility, contemplation and finally evaluation and disclosure) of high quality SL. Transitional coaching program was embraced during the three years of the implementation of the program. The transitional coaching program was found suitable, realistic, and workable and improvements were perceived in the amount of impact of the program on the learning objectives, but no statistically significant in the improvements were yet achieved. Finally the project highlights the significance of considering beyond fulfilment and partaking in rigorous assessment of learning objectives and enduring eminence improvement

through consideration of best performances, continuous quality improvement, and evidence–based SL researches [26]. Despite the empirical evidences on service-learning yet there are least if not no empirical evidences on the goals areas relevant for service-learning implementation in technical and vocational education. Hence, the study addressed this research gap.

III. RESEARCH OBJECTIVES

The research paper aimed at deploying a SEM to consolidate the goals of service-learning that reveals the relevant aspects regarded as significant determinants of service-learning in tertiary education institutions offering TVE. Specifically, the regression analysis and structural equation modeling (SEM) were employed to analyses the quantitative data collected from 267 TVE stakeholders that partaken in the study. The relevant areas in which the SEM was based were: strengthen school-community relationship, arouse students' interest and attitude toward TVE, improves skills of working collaboratively, promotes reflection to integrate skills and ideas, sharpen the student's ability to solve problems creatively, facilitates research ideas and clarifications, offers valuable intellectual experience for job creation, motivate students to work hard, integrate theory and practice, assist students to explore workplace potentials, and gives avenue for faculty to ascertain community service mission.

IV. RESEARCH QUESTIONS

Three research questions were formulated and guided the research as follows:
RQ 1: what is the reliability of the initial draft of the questionnaire on goals areas for incorporation of service-learning in TVE?
RQ 2: what are the goals areas considered relevant for incorporation of service-learning for TVE departments in the Nigerian tertiary education?
RQ 3: what are the significant values of the goals areas considered relevant for incorporation of service-learning in TVE department in the Nigerian tertiary education?

V. RESEARCH HYPOTHESIS

A Corresponding null hypothesis (Ho) to RQ3 was tested as follow:
Ho: Goals areas considered relevant for incorporation of service-learning in TVE do not differ significantly.

VI. METHODOLOGY

Descriptive survey design was utilized for collection of data in 15 tertiary education institutions that involved, Colleges of Education (Technical), Polytechnics and Universities offering TVE in north-eastern sub region of Nigeria. Analysis involving relationships was carried out on the draft model to authenticate significant influence of the observed variables on the unobserved variable which

yielded a hypothetical model. Finally, a hypothesized draft measurement model was verified for fit indices and accorded against the default model.

Sample size of 267 respondents were chosen by means of a purposive sampling procedure from 15 tertiary education institutions in north-eastern sub region of Nigeria [25]. These institutions were purposely sampled irrespective of their possession and control. This is because the similar tiers of institution have synchronized characteristics in admission, graduation requirements, curriculum and supervisory bodies. Furthermore, the research respondents were selected using purposive random sampling technique because only staff from TVE departments partaken in the study.

Initial draft of the questionnaire that comprised of 25 items was pilot tested on sample of lecturers, head of departments and policy maker from three different tertiary education institutions in northwestern Nigeria. Analysis of internal consistency of the data collected from the initial draft of the questionnaire revealed a Cronbach's alpha coefficient of 0.83. Numerous standard range values for a suitable level of reliability have been recommended, for instance, a least limits varying from 0.5 to 0.7 [26] [27]. The modified questionnaire (GOSLITVEQ) was evaluated to have internal consistency of reliability above the lower limits range recommended.

A 15 item draft questionnaire was developed that was finally modified to 11 item. The questionnaire uses 4-point scale was validated and pilot tested. The developed questionnaire comprised of significant areas considered relevant as determinants for consideration in consolidating the goals of service-learning for TVE departments. Finally, the modified questionnaire was employed in the data collection on the opinions of TVE lecturers, head of departments and policy makers on areas considered relevant to be incorporated as goals of service-learning for TVE departments in Nigerian tertiary education institutions.

Data collected was further entered into Statistical package for Social Science (SPSS) and Analysis of Moment of structures (AMOS) for PC Windows and analyzed. SPSS was used for Cronbanch's Alpha analysis of pilot study and Step-wise linear regression analysis was used to determined relevant goal areas of service-learning for TVE and indeed level of relevant of the goal areas identified. In addition, the structural equation modeling specifically, the CFA was used to determine the relationship between the observed goal areas and their latent variable (un-observed variable) of this research.

VII. RESULTS AND DISCUSSION

Results obtained from this research were categorized into three parts that comprised of reliability of the questionnaire from Cronbach's alpha analysis, goals areas and their level of relevant from step-wise linear regression analysis and confirmatory factor analysis between observed variables and their unobserved variable from CFA .

Cronbach's Alpha Analysis
RQ1: What is the reliability coefficient of the initial draft of the questionnaire on goals areas for incorporation of service-learning in TVE?

The internal consistency coefficient test of the initial draft was carried-out by selecting Cronbach's alpha under reliability methods in SPSS software. The analysis was calculated and the result obtained is reveals in table 1 as follows

Table 1 displays the computed Cronbach's alpha analysis for the initial draft of the questionnaire on course learning goals. Item-total statistic of fifteen areas considered in the scale for the goals of service-learning reveals a Cronbach's alpha coefficient of 0.79. However, a 'rule of thumb' of 0.80 was regarded for an item to have good fit. Based on this reason, item 1, 6, 7 and 12 (Permit student to broaden the habit of critical reflection, Inspires an appreciation of the skills required for lifelong learning, Links to networks of professionals and community members, and Enhances student's sense of civil obligations) in the scale were dropped as they may not be used as predictors for assessing course learning goals in the main study. The four items have low item-total correlation of 0.210, 0.14, 0.31 and -0.18 respectively, with calculated Cronbach's alpha if item deleted values of 0.805, 0.822, 0.818 and 0.833 respectively. Consequently, the 4 items were deleted and the Cronbach's alpha coefficient value; improves to 0.83, correlation coefficient value of 0.168 was established for the scale. Finally, only 11 out of 15 items were having good fit for use as predictors of course learning goals.

Regression Analysis:
RQ 2: what are the goals areas considered relevant for incorporation of service-learning for TVE departments in the Nigerian tertiary education?

Step-wise criteria method in SPSS software version 21 was selected for the regression analysis. The analysis was conducted and the result in table 2 was achieved as follows:

Table 1 Cronbach's Alpha Reliability on Goals of SL in TVE

S/No	ITEM	Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	Permit student to broaden the habit of critical reflection	43.23	27.702	.110	0.805
2	Sharpen the student's ability to solve problems creatively	43.13	26.395	.535	0.778

3	To Improves collaboratively work skills	43.00	26.414	.430	0.785
4	Arouse students' interest and attitude toward TVE	43.10	27.610	.291	0.796
5	Integrate theory and practice	42.87	25.430	.747	0.764
6	Inspires an appreciation of skills required for lifelong learning	43.17	29.454	.014	0.822
7	Links to networks of professionals and community members	43.03	29.413	.031	0.818
8	Motivate students to work hard	42.83	25.316	.824	0.761
9	Offers valuable intellectual experience for job creation	42.93	24.409	.768	0.758
10	Strengthen school-Community relationship	42.83	24.075	.749	0.757
11	Helps reflection on how to integrate skills, and ideals in a career	42.77	26.185	.504	0.779
12	Enhances student's sense of civil responsibilities	42.83	31.247	.168	0.833
13	Facilitates research ideas/clarifications	42.67	26.299	.691	0.771
14	Assist students to explore workplace potentials	42.57	26.323	.647	0.773
15	Gives avenue for faculty to ascertain community service mission	42.57	26.392	.564	0.777
Cronbach's Alpha Coefficient of Scale					**0.79**

Table 2 presents regression analysis that answered research question 2, specifically the stepwise linear regression criteria was used. Significant relevant goal areas of service-learning was found with $F_{7, 160}$ 153 = 1235.467, P < .05 and R^2 = .983 for seven out of eleven observe goals of service-learning goals. The observe goal areas considered relevant and their respective standardized Beta values were: arouse students' interest and attitude toward TVE = .333, Improves skills of working collaboratively = .333, Promotes reflection to integrate skills and ideas = .366, Sharpen the student's ability to solve problems creatively = .103, Offers valuable intellectual experience

for job creation = .286, Motivate students to work hard =286 and Integrate theory and practice = .265, P < .05. From the summary of the stepwise linear regression analysis in table 2, 7 observe goals were considered relevant for implementing a service-learning as a unit bearing course in TVE in tertiary education institution.

Table 2: Regression Analysis on Goals of Service-Learning in TVE

	Observed Goals Areas for Service-learning in TVE	Std. Coeff. Beta	t value	Sig.
1	a) Arouse students' interest and attitude toward TVE	.983	67.83	.000
2	a) Arouse students' interest and attitude toward TVE	.495	4.92	.000
	b) Improves skills of working collaboratively	.493	4.90	.000
3	a) Arouse students' interest and attitude toward TVE	.579	5.81	.000
	b) Improves skills of working collaboratively	.571	5.75	.000
	c) Promotes reflection to integrate skills and ideas	-.168	-3.61	.000
4	a) Arouse students' interest and attitude toward TVE	.281	2.68	.008
	b) Improves skills of working collaboratively	.517	5.67	.000
	c) Promotes reflection to integrate skills and ideas	-.278	-5.97	.000
	d) Sharpen the student's ability to solve problems creatively	.463	5.71	.000
5	a) Arouse students' interest and attitude toward TVE	.352	3.55	.001
	b) Improves skills of working collaboratively	.575	6.69	.000
	c) Promotes reflection to integrate skills and ideas	-.121	-2.23	.027
	d) Sharpen the student's ability to solve problems creatively	.638	7.61	.000
	e) Offers valuable intellectual experience for job creation	-.460	-4.86	.000
6	a) Arouse students' interest and attitude toward TVE	.272	2.75	.007
	b) Improves skills of working collaboratively	.466	5.20	.000
	c) Promotes reflection to integrate skills and ideas	-.144	-2.71	.007
	d) Sharpen the student's ability to solve problems creatively	.579	6.95	.000
	e) Offers valuable intellectual experience for job creation	-.434	-4.71	.000
	f) Motivate students to work hard	.245	3.29	.001
7	a) Arouse students' interest and attitude toward TVE	.521	3.48	.001
	b) Improves skills of working collaboratively	.522	5.66	.000
	c) Arouse students' interest and attitude toward TVE	.521	3.48	.001
	d) Improves skills of working collaboratively	.522	5.66	.000
	e) Arouse students' interest and attitude toward TVE	.521	3.48	.001
	f) Improves skills of working collaboratively	.522	5.66	.000
	g) Arouse students' interest and attitude toward TVE	.521	3.48	.001

Table 3: Regression Analysis on the Level of Important of Observed Goals Areas

S/No	Observed Goals Areas for Service Learning in TVE	R	R^2	Adjusted R^2	Std. Error
1	Arouse students' interest and attitude toward TVE	.983a	.967	.966	.530
2	To improve collaborative working skills	.985c	.971	.971	.496
3	To Promotes reflection to integrate skills and ideas	.987d	.973	.973	.478
4	Sharpen student's ability to solve problems creatively	.989e	.978	.977	.436
5	Offers valuable intellectual experience for job creation	.990f	.981	.980	.407
6	Motivate students to work hard	.991g	.982	.981	.395
7	Integrate theory and practice	.991h	.983	.982	.390

Table 3 reveals the hieratical level of model of the 7 goals area considered significant for service-learning in TVE. The model comprised of the 7 observed goals areas as presented based on hieratical order in descending order as: arouse students' interest and attitude toward TVE, improves skills of working collaboratively, promotes reflection to integrate skills and ideas, sharpen the student's ability to solve problems creatively, offers valuable intellectual experience for job creation, motivate students to work hard and integrate theory and practice. The observed goal areas have R-square (regression index) values of .967, .971, .973, .978, .981, .982 and .983 respectively. This implies that all the seven observed areas are highly adequate for goals of service-learning in TVE. The correlation coefficients (R) were presented in descending order, starting from observed goals with higher level of important to the observed goal that has least level of important.

Results of the Confirmatory Factor Analysis

A confirmatory factor analysis of research question 3 with its corresponding hypothesis was conducted using AMOS software version 18. The CFA test for the relationship between the 11 goals areas found in research question 1. This was to discover the degree of goodness of fit between the 7 observed goals and latent variable. The CFA reveals the initial measurement model of the 11goal areas as found from the AMOS output in figure 1.
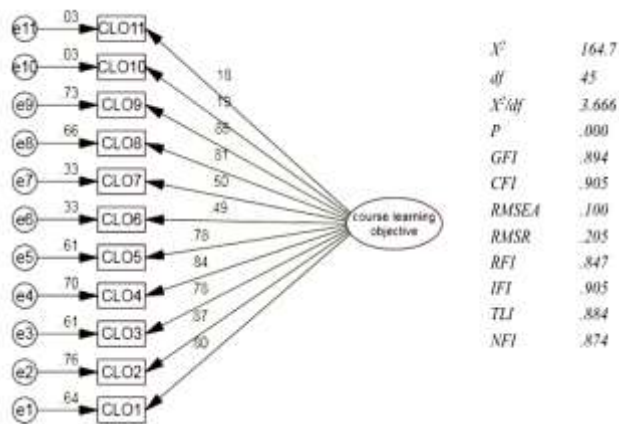

Figure 1: Standardized Estimate of Initial Measurement Model of Goals for SL

Figure 1, reveals a confirmatory factor analysis (CFA) of the Initial measurement model of goal areas of service-learning in TVE. The observe variables in the initial model of the 11 goal areas were coded as; CLO1 (strengthen school-community relationship), CLO2 (arouse students' interest and attitude toward TVE), CLO3 (improves skills of working collaboratively), CLO4 (promotes reflection to integrate skills and ideas), CLO5 (sharpen the student's ability to solve problems creatively), CLO6 (facilitates research ideas and clarifications), CLO7 (offers valuable intellectual experience for job creation), CLO8 (motivate students to work hard), CLO9 (integrate theory and practice), CLO10 (assist students to explore workplace potentials) and CLO11 (gives avenue for faculty to

ascertain community service mission). Factor loadings (regression weights) of .80, .87, .78, .84, .78, .49, .50, .81, .85, .19, and .18 were found in the initial measurement model of the 11 goal areas were found respectively. The estimate in the AMOS statistic text output revealed that the regression weights have significant t-values except for CLO10 and CLO11.

The first model reveals in figure 1 shows that the model did not meet the criterion of standard model fitness. This decision was based on the model fit indices found in the initial model. However, to ascertain a better fit model, a trimming of this model in a logical ways deemed necessary. This was done by considering possible indicators (problematic observe variables) in the AMOS statistics that might have caused inadequate goodness of the initial mode

Table 4 Regression Weight of Initial Measurement Model of Goal Areas of SL in TVE

		Estimate	S.E.	C.R.	P	Label
CLO1	<--- course learning object.	1.000				
CLO2	<--- course learning object.	.907	.061	18.155	***	par_1
CLO3	<--- course learning object.	.866	.060	14.556	***	par_2
CLO4	<--- course learning object.	.915	.061	16.715	***	par_3
CLO5	<--- course learning object.	.829	.063	14.787	***	par_4
CLO6	<--- course learning object.	.844	.085	11.172	***	par_5
CLO7	<--- course learning object.	.853	.091	9.392	***	par_6
CLO8	<--- course learning object.	.974	.060	16.278	***	par_7
CLO9	<--- course learning object.	.981	.063	17.176	***	par_8
CLO10	<--- course learning object.	.176	.075	2.347	.019	par_9
CLO11	<--- course learning object.	.168	.076	2.202	.028	par_10

Table 4 presents regression weights of initial measurement model of course learning objective which indicates that all the calculated variables were statistically significant at a confidence alpha value of p = 0.05 except for CLO10 and CLO11. From this stage any variable that was not statistically significant need to be removed to allow building of suitable model fitness. For this reason, CLO10 and CLO11 were considered for removal from the initial model.

Table 5: Normality of Initial Measurement Model of Goals of SL in TVE

Variable	Min	Max	Skew	c.r.	kurtosis	c.r.
CLO11	1.000	5.000	-.002	-.011	-.822	-3.744
CLO10	1.000	5.000	-.184	-1.230	-.967	-3.558
CLO9	1.000	5.000	.477	2.183	-.694	-2.313
CLO8	1.000	5.000	.548	3.657	-.407	-1.358
CLO7	1.000	5.000	.263	1.752	-.773	-4.247
CLO6	1.000	5.000	.193	.291	-.805	-4.020
CLO5	1.000	5.000	.679	3.527	-.205	-.684
CLO4	1.000	5.000	.528	3.524	-.465	-1.550
CLO3	1.000	5.000	.416	2.778	-.474	-1.580
CLO2	1.000	5.000	.493	3.288	-.779	-2.600
CLO1	1.000	5.000	.482	3.215	-.392	-1.309
Multivariate					32.662	15.442

Table 5 shows assessment of univariate normality of the initial measurement model of course learning objective variables. In an ideal situation, the entire variables supposed to be roughly in a univariate normal distribution. A univariate distribution happens only when the skewness and kurtosis parameters of a certain observed variable fall within the range of -1 and +1. The skewness and kurtosis parameters of the entire sub-observed construct were all less than a unit value. This has support the application of these sub-observed constructs for building a structural equation modeling in the initial model of course learning objective for service-learning integration in TVE

Table 6 Standardized Residual Covariance of initial Measurement Model of Goal Areas in SL for TVE

	CLO11	CLO10	CLO9	CLO8	CLO7	CLO6	CLO5	CLO	CLO3	CLO2	CLO1
CLO11	.000										
CLO10	1.40	.000									
CLO9	1.09	.61	.000								
CLO8	.239	-1.73	.750	.000							
CLO7	-1.01	-.240	-.821	.745	.000						
CLO6	-.726	-.508	-.512	.614	.660	.000					
CLO5	-.535	.816	.102	.021	.072	.501	.000				
CLO4	-.034	.125	-.382	-.360	-.604	.032	.380	.000			
CLO3	-.732	.440	-.190	-.302	-.174	-.690	-.663	-.24	.000		
CLO2	-.481	-.305	-.292	-.140	.422	-.146	-.35	.420	1.09	.000	
CLO1	1.390	1.011	.912	-.813	.113	.206	.364	.432	.201	-.960	.000

Table 6 indicates standardized residual covariance analysis of initial measurement model of course objectives for service-learning integration. Highest residual covariance between twosomes of variables was 1.74 in absolute measured value. Generally, the standardized residual covariance value of < 2 in absolute between pair is required for a model to be considered appropriate. The standardized residuals of the initial measurement model in course learning objective were considered good for model fit.

Table 7: Covariance of Initial Measurement Model of Goal Areas of SL in TVE

			M.I.	Par Change
e8	<-->	e10	11.305	-.153
e8	<-->	e9	10.627	.104
e7	<-->	e11	8.713	.221
e7	<-->	e10	4.981	.164
e6	<-->	e10	13.661	.273
e6	<-->	e8	4.319	-.108
e6	<-->	e7	23.140	.403
e4	<-->	e9	4.280	-.064
e2	<-->	e4	4.205	.061
e2	<-->	e3	18.131	.130
e1	<-->	SL Goal Areas	9.297	-.154
e1	<-->	e8	5.874	-.085
e1	<-->	e7	4.588	.122
e1	<-->	e2	14.957	-.130

Although, regression weight estimate was considered for the trimming of CLO10 and CLO11 due to insignificant statistical relationship of the two variables. Beside the chi-square statistic remained higher. Covariance statistical analysis for initial measurement model of course learning objectives in table 7 shows that error term e1 correlated and affected many other related error terms (e2, e8, and e8) including the main observed construct variable. Again, measurement error e6 has correlated to distress with three other measurement error terms(e7, e8 and e10). Deletion of observed factors with error terms e1 and e6 deemed critical; as this might decrease the chi-square statistic to the bearest minimun. Another reason for deletion of this observed factors was due higher modification indices and par change values as shown under M.I. and par change column.
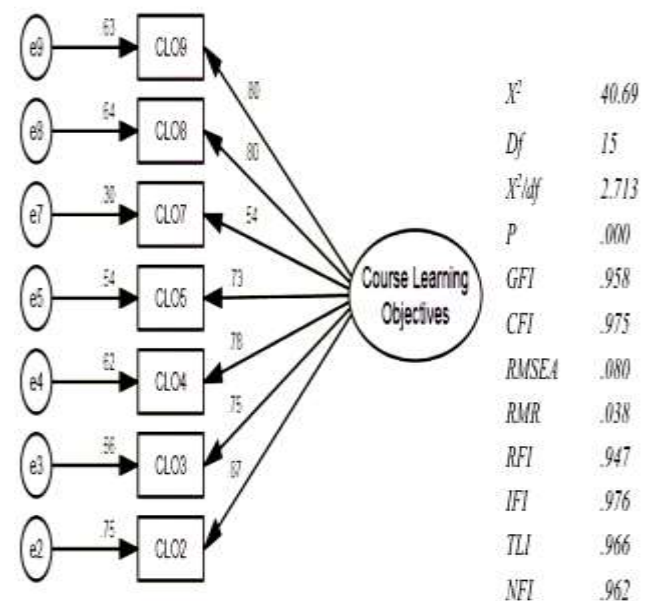

Figure 2, Standardized Estimates of Modified Measurement Model of Course Learning Objective.

Figure 2 shows the verified model of Service-learning on course learning objective in TVE. The result indicates that all the observed values (X^2 = 40.69, df = 15, X^2/df = 2.713, P .000, GFI = .959, CFI = .975, RMSEA = .080, RMR = .038, RFI = .947, IFI = .976, TLI = .966 and NFI =.962) were suitably fitted for the modified model of service-learning on course learning objective in TVE. The standardized estimates indicates that observed factor that has the higher factor loading or regression weight (relationship) to the observed construct (course learning objectives) was CLO2 (arouse students' interest and attitude toward TVE), CLO8 (motivate students to work hard), CLO9 (integrate theory and practice), CLO4 (promotes reflection to integrate skills and ideas), CLO3 (improves skills of working collaboratively), CLO5 (sharpen the student's ability to solve problems creatively) and CLO7 (offers valuable intellectual experience for job creation), and the text output on regression weight estimates between the observed factors and the main observed construct showed significant t-value at P = 0.05.

Consequently, the hypothesis of significant relationship between relevant factors and aspect of course learning objective was accepted. This has clearly indicated that all the seven observed factors matched to the course learning objectives of service-learning in TVE at tertiary education level. Based on this reason, figure 2 was used for the development of conceptual service-learning model for integration in TVE.

Table 8: Normality of Modified Measurement Model of Course Learning Objectives Aspect

Variable	Min	max	skew	c.r.	kurtosis	c.r.
CLO9	1.000	5.000	.477	3.183	-.694	-2.313
CLO8	1.000	5.000	.548	3.657	-.407	-1.358
CLO7	1.000	5.000	.263	1.752	-1.273	-4.247
CLO5	1.000	5.000	.679	4.527	-.205	-.684
CLO4	1.000	5.000	.528	3.524	-.465	-1.550
CLO3	1.000	5.000	.416	2.778	-.474	-1.580
CLO2	1.000	5.000	.493	3.288	-.779	-2.600
Multivariate					39.856	29.009

Table 8 shows assessment of univariate normality distribution of the modified measurement model of course learning objective variables for service-learning integration in TVE. The skewness and kurtosis parameters of the seven observed factors variables were approximately in a univariate distribution, since the skewness and kurtosis parameters were found to be between the range of -1 and +1. The skewness and kurtosis parameters of the entire sub-observed construct were all less than a unit value. This has support the application of these observed factors in course-learning objectives for developing a model of service–learning for integration in TVE.

Table 9: Standardized Residual Covariance of Modified Measurement Model of Goal Areas of SL in TVE

	CLO9	CLO8	CLO7	CLO5	CLO4	CLO3	CLO2
CLO9	.000						
CLO8	.813	.000					
CLO7	-.733	.724	.000				
CLO5	.309	.089	.168	.000			
CLO4	-.237	-.364	-.554	.529	.000		
CLO3	-.196	-.443	-.231	-.656	-.297	.000	
CLO2	-.417	-.425	.264	-.463	.228	.755	.000

Table 9 reveals standardized residual covariance of revised measurement model of course learning objectives for service-learning in TVE. All the standardized residual covariance value are less than 2 in absolute, which mean that the seven measured observe factors have conformed well to the model of course learning objectives for service-learning in TVE. It also shows that that the model was properly developed

Table 10 Content Validity of Modified Measurement Model of Goals Areas of SL in TVE

Code	Service-learning goal Areas	Mean	Std. Dev.	Cronbach's Alpha
CLO2	Arouse students' interest and attitude toward TVE	2.565	1.043	
CLO3	Improves skills of working collaboratively	2.861	1.153	
CLO4	Promotes reflection to integrate skills and ideas	2.700	1.029	
CLO5	Sharpen the student's ability to solve problems creatively	2.655	1.110	.906
CLO7	Offers valuable intellectual experience for job creation	2.490	1.094	
CLO8	Motivate students to work hard	2.898	1.349	
CLO9	Integrate theory and practice	2.895	1.394	

Table 10 shows analysis of content validity of all the observe factors that conformed to course learning objective for service-learning in TVE. Subsequent to the realization of the modified model of course learning objective, SPSS statistical software was used to verify the internal consistency of the model. The outcome revealed a Cronbach's alpha of 9.06 with a corresponding standard deviation of the seven Observe factors ranging from 1.029 to 1.394. This indicates that the Model is reliable for the development of conceptual service-learning model for integration in TVE at the tertiary education level.

VIII. DISCUSSION OF FINDINGS

First and famous, the finding reveals that service-learning objective can aimed to arouse students' interest and attitude toward TVE. Several studies show that service-learning in school has significant effects on stimulating student interest and attitude; for example, a similar research focus that examines the potential influence of service-learning on political science student attitudes and behavior suggest a positive conclusion that the pedagogy influences the socioeconomic attitudes and beliefs [28]. Also positive result on arousing student interest and attitude toward their conventional career and the service-learning course [29].

Secondly, the sense of working collaboratively was found as a goal of service-learning. Study on service-learning integration in Psychology and human development also reveals that service-learning facilitates student's logic of operating in collaboratively working environment [30 31]. Similar research pattern reveals that understanding of student sense of collaborative project working can inform work in community involvement [32]. Individuals working collaboratively toward a common service-learning project goals, targeted to have behavioral, emotional and cognitive elements of teamwork when involves alliance with and commitment to the project purpose were also ascertained [33].

Thirdly, Promoting integrated reflection for learning ideas and skill was found as part of the finding on goal of service-learning in TVE. This finding corroborated bulk of research results. Building effective reflection for inspiring learning is among the basic elements for effective

integration of service-learning. No doubt, this has been supported in many service-learning researches have confirmed this finding that affirms multiple reflection methods to encourage intellectual thought was among the fundamental reason that was considered useful in the design and fulfillment of service-learning curricular objectives [34]. It was also agreed that "service-learning course objectives, was develops and integrated into the course by means of some form of reflection on the service in light of course objectives, and the assignment is assessed and evaluated accordingly" [35]. In addition, research has also agrees that faculty set reflection in association to service-learning as goal to offer the idea of critical reflection to students to construct their learning which can enable them shift from the role of a "receiver of learning to a producer of learning" [36 31].

Fourthly, sharpening of student's ability to solve problems creatively was found as one of the goal that deemed relevant in Service-learning in TVE. Many research findings have confirms this finding. For instance, Moely and colleagues confirm that service-learning is currently an innovative instructional practice in higher education that support students to creatively address real life problem related to course concepts [37 38]. Similarly, in Tulane University, students provides wide variety of services during service-learning course with the objective to expand the creativity scope of students beyond what is obtainable in the traditional classroom [39]. Fifthly, offering valuable intellectual experience for job creation was established as a finding under goal of service-learning for integration in TVE. This finding is supported by the proclamation which reveals that meaningful service-learning experience can helps in cultivating skills that are needed for effective functioning in ever changing world of work. It also was confirmed that the changing philosophy of higher education to offers meaningful academic experience for work has made many universities and colleges to integrate service-learning into their course [40].

Sixthly, motivating students to academically work hard in their course was found as one of the goal area of Service-learning in TVE. This finding confirmed the research position of several researches conducted in different field related to service-learning integration. For instance, service-learning was integrated in vocational high school in USA to encourage students to improve their intellectual skills and understanding [41]. This finding also corroborated the proclamation which reveals that learning scientists implement service-learning to encourage students' to improve their science process skills and ability to make discovery from an instructive objects, and to also improve their ability to transfer knowledge gained to entirely real life situation [42 7]

Lastly, the finding on integrating theory to practice was found to be another relevant goal area considered for service-learning in TVE. This finding confirmed service-learning research which stated that adaptable enclosure of service-learning for linking theory with practical represents

powerful platform that offers opportunity for "the more abstract and theoretical material of the traditional classroom takes on new meaning as the student "tries it out," so to speak, in the "real" world" [43]. This finding has concurs the declaration that disclose that service-learning was implemented to develop both understanding and realistic application of didactic theory for gaining clear practical experiences [44].

IX.   CONCLUSION AND FUTURE SCOPE

Goal areas in service-learning for TVE in tertiary educational institutions of Nigeria are essential ingredients for successful implementation of service-learning. The relevant of sound service-learning goals was clearly enunciated in this research based on ideas of administrators, policy makers and lecturers in TVE department in tertiary academic institutions. The service-learning goals areas found were: arouse students' interest and attitude toward TVE, Improves skills of working collaboratively, Promotes reflection to integrate skills and ideas, Sharpen the student's ability to solve problems creatively, Offers valuable intellectual experience for job creation, Motivate students to work hard and lastly Integrate theory and practice. In addition, the goal areas were discovered and arranged base on the level of relevant for implementation of service-learning for tertiary education institutions offering TVE. An institution may wish to choose which among the goal areas should start with.

Certainly, the goal areas established in this study could serve as a legitimate instrument for steering the implementation of service-learning in TVE at the tertiary education level. Also, their implementation could serve as a founding for strong and reliable TVE practices in the Nigerian tertiary institutions for developing a holistic and skill minded TVE graduates that are needed in the 21st century world of work. Therefore, the study recommends the goal areas for TVE in the Nigerian tertiary institutions.

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