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Work-Based Learning Conceptual Framework for Effective Incorporation of Soft Skills Among Students of Vocational and Technical Institutions

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ABSTRACT The importance of soft skills has been recognized in most fields, hence, various companies make judgments on work and success evaluation based largely on employees' soft skills. Work-Based Learning (WBL), as an educational approach, can harness students' potential in soft skills. This investigation aimed to generate a conceptual framework for WBL to effectively integrate soft skills among students in technical colleges. A sample of 268 technical teachers was drawn from a population of 302 technical teachers from 22 public technical colleges within the study area using a stratified random sampling methodology based on the complex heterogeneity of the population. The study adopted structural equation modeling (SEM) to determine the nexus underlying the model, using analysis of moment of structures (AMOS) version 20. The study results discovered WBL preparation (planning and designing), supervision, and evaluation each have a positive impact on soft skill development among technical college students. By way of recommendation based on the study findings, the government should formulate and implement suitable policies to enhance planning and designing in WBL programmes, particularly, to address the needs of students for adequate incorporation of soft skills at technical colleges. Technical teachers could employ the WBL-recognized elements in integrating workplace experiences to successfully promote students' soft skills at technical colleges.

INDEX TERMS Soft skills, structural equation modeling, technical colleges, work-based learning.


I. INTRODUCTION

Soft skills have now been known to be key in advancing graduates' employability [1]. Soft skills are defined as all skills that are not firmly related to a specific job but are essential in whatever role they play, as they mainly contribute to relationships and effectiveness among people working in an organization [2], [3]. Usually, soft skills are deemed complementary to hard skills and are significantly the capacity to undertake other forms of assignments or events. Besides, soft skills are especially important as they make graduates effective in both personal and professional life, thus they are essential for a candidate pursuing any sort of job.

Therefore, the improvement of students' employability has continued to draw significant attention from various actors in the education and working sectors [2], [4]. As a result of globalization and the transition from a manufacturing and

technology-based economy to an information or knowledge-based economy, the skills needed at the workplace of the 21st century have radically changed. The acquisition of solely technical skills in the graduates' fields was found to be inadequate for graduates to gain jobs and to be effective at work [5], [6]. Additionally, industries face problems with graduates due to inadequate soft skills, such as problem-solving skills, leadership skills, ICT skills, communication skills, critical thinking skills, and resource management skills [7]–[9]. Students, therefore, should learn soft skills in addition to hard skills. Consequently, the emphasis of institutions of learning nowadays is on educational methodologies that boost learners' active involvement in the procedures of teaching-learning to incorporate soft skills among students.

Development of employable students that will become more productive in the workplace after graduation has been a major challenge of Nigeria TVET establishments [10]. Besides, Nigerian technical institutions are blamed for creating miniature to no attempt to improve soft competencies

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among students, consequently, they barely produce employable graduates [11]. In the study by Ayonmike and Okeke [12], it was also observed that Nigerian learning institutions mainly emphasized the teaching of technical skills and ignored the importance of soft skills. Numerous researchers traced the issue to the program's current material, which put more focus on knowing technical information to the detriment of soft competencies. This assertion was corroborated by Uwaifo and Uwaifo [13] who admitted that Nigerian technical colleges lack the development of soft competencies among the students. Furthermore, certain scholars blamed teachers for implementing teacher-centered methods of teaching rather than learner-centered methods of teaching [12], [14].

Graduate employability is regarded as a critical success factor for Technical and Vocational Education and Training (TVET) programmes by technical colleges, industries, and the students, hence, good partnerships between these stakeholders would enhance effective work-based experiences for the attainment of the students' required soft skills. In the planning of work-based learning activities, a partnership among the participants should, therefore, be adequately considered to enhance work-based learning for the effective attainment of the learning outcome. Technical colleges are among TVET institutions that are accountable for integrating understanding and competencies to generate graduates for the world of work [15]. Such organizations are intended to boost the nation's job prospects for youths, a healthier life, individual stability, and socio-economic development [16]. Based on the research conducted by Farooq [18], it was submitted that most graduates of the technical college are deficient in the employability skills needed to compete among the employees of the 21st century. The reputation of graduates from the technical colleges in Nigeria has been observed to be declining swiftly particularly in the aspects of soft skills such as; ability to solve problems, communication skills, interpersonal skills, leadership competencies, information management abilities, and critical thinking skills [11]. Providing training and the skills needed for students to be economically employable or be self-sufficient is a typical aim of the technical colleges in Nigeria [19].

Sadly, joblessness in Nigeria is increasing yearly with graduates at the highest level due to inadequate employability skills. The inconsistency concerning the skills attained by students and the skills needed in the contemporary workplace has been observed as major causes for the extraordinary level of unemployment among graduates [20], [21]. There can, therefore, be no argument that this pattern in unemployment is the consequence of the constant level of production of graduates without employability skills. This, however, cries for vigorous methods of teaching and learning which could adequately cultivate the appropriate skills among students.

WBL is an educational methodology of structural arrangement which introduces learners to work and learning environments at the same time [22]. WBL typically refers to all and any learning that is found in the workplace or derived

directly from workplace activities. It's simply an attempt to broaden the barriers of the classroom to embrace the community as a learning resource. WBL denotes student learning assisted by research and teaching methods which exist under formal instruction in real-life settings and as part of a component of a course towards achieving learning goals. It provides enough opportunities for students to acquire a range of competencies and connect between college and the workplace through collaboration [23]. The breach between theory and practice is enhanced through the opportunity offered for students in WBL so that practical information can be adequately assimilated. WBL entails the development of experiential learning programmes that use the work environment as an essential part of the curriculum [24]. Students are provided with designed learning experiences through the joint efforts of teachers and school employers through WBL [25]. Civis *et al.* [26] emphasized the modeling of the learning environment through partnership to enable learners to cultivate relevant skills. Among the basics of a WBL system is the use of the workplace as learning recourse [27]. WBL offers the industries the advantage of getting free labour in the form of partnership while the College benefits from the privilege of free access to facilities in the industries. Consequently, the industry will have the advantage of employing students who through collaboration have developed essential skills. Besides, graduates have the advantage of being employed immediately after graduation by the industries as a result of the collaboration.

Smith and Betts [28] in their study on realizing the potential of work-based learning through partnership in learning, identified some basic educational principles and criteria that are vital in identifying successful work-based learning to include but not limited to the following: preparation, collaboration, participation, supervision, and Assessment. The study went on to find that the WBL partnership increases the value added by shifting the principal philosophy in business, from one of learning as a cost to one of learning as a future investment.

A study on partnerships between universities and workplaces to determine the challenges for work-integrated learning was carried out by Sarojni and Delahaye [29]. It was revealed that such a relationship became challenging and requested that knowledge-power ties between the institution and the host organization be redirected. However, the research substantiates that effective collaborative learning practice that addresses the needs of learners and their employers is dependent on a learning relationship through which the roles for the programme and pedagogy are honestly pooled. They went on to state that activities in such partnerships are essential to successful work-integrated learning and are severely challenging, thus begging for more research to understand the dynamics and techniques of approaching learning partnerships between institutions and organizations.

On the other hand, Stasz and Brewer [30] carried out a study to examine two programmes running in the same school system where students earn credit for taking part in

the WBL course. They centered on two subjects: quality of job opportunities and connection between classroom participation and school results, including impacts on student work and social association. They found that, given variations like work involved and some institutional aspects of the services, students interpret the consistency of their job experiences as being quite close across the programmes. On the other hand, they also found that both systems have flaws in creating relations between school and work and that certain facets of school success are adversely affected by the amount of time students engage in work, such as finding time to do homework and choosing to remain in school. The results, however, raise concerns about the value-added of WBL, considering the costs of system planning and implementation and, in some cases, participation.

Therefore, past studies have produced conflicting results as to whether work truly contributes to the education of students since students who work seem to receive economic rewards, yet sometimes they pay an educational price [31]. Linking the work of the students with learning in the classroom could alleviate relevant skills, although it is challenging to do so. WBL has a significant beneficial experience, but technical colleges hardly ever benefit from this extremely rich educational knowledge because of the lack of sufficient implementation of pedagogical approaches.

The current study has adopted the identified basic educational principles and criteria that are vital to successful WBL to include but are not limited to the following: preparation, supervision, and Assessment [28]. These constructs are adopted because they have defined satisfactorily the features of WBL required for the successful integration of soft competencies among technical college students. Besides, the measures were chosen as an essential baseline for affording students with the opportunity to high-quality WBL, however, they are not all-encompassing [28].

A. PREPARATION IN WBL PROGRAMME

In other words, this is known as the planning and designing stage where the necessary arrangements for the success of the WBL programme are made. In this case, identifying students' educational needs and making it known to the participants since it is teamwork toward attaining students' educational needs. This stage also deals with the designing of activities of professional awareness to make students responsive to the range of careers and/or professions in the industry thereby enhance their understanding of the skills essential for specific careers and the prospects of the place of work [32]. These undertakings may comprise field trips, workstation tours, or informational consultations. Moreover, career exploration activities should be designed to offer students the chance to discover fields of importance that are related to both academic learning and career goals.

Preparation also has to do with planning and designing the mentorship process. Make public sector support available to the private sector, such as allowing industry-based mentors to attend government-run, in-service courses for instructors

and assessors. Planning the programme should be such that it is compatible with the time unit of the college, however, ensuring intensity of contacts; this is because the more intensive the contacts where the employer acts as a trainer, facilitator, mentor, assessor, and tutor, the more the effectiveness of the WBL programme [33]. Piloting of WBL in chosen industries is an important aspect of the preparation; it is essential to establish collaborations between institutions and employer groups. These partnerships will further strengthen social media, development of curricula, and implementation of training schedules, and mentoring and evaluation of trainees.

B. SUPERVISION IN WBL PROGRAMME

Supervision entailed feedback and encouragement students receive to ensure that the learning environment is improved and that they get the most positive overall experience possible while on placement. Supervision in WBL systems has been described as an essential factor in student success, therefore, a supervisor ought to properly recognize the role of supervision, and be proficient in the knowledge and resources needed for successful supervision [32]. Good supervision essential elements include instruction, modeling, supervised practice, and feedback [33]. Supervision is challenging, however, it enhances effective learning for students and positive work-study experience [34].

The institution-based supervisor and the industry-based supervisor are responsible for the supervisory roles regarding WBL. In this research, we are primarily concerned with institution-based supervision, but recognize that a well, jointly fruitful relationship between the two is vital. The institution-based supervisor is accountable for evaluating student learning associated with the placement and may work together with the industry-based supervisor to stabilize work performance and learning assessments [35]. Institutional supervisors are to help students link between work and study, however, the WBL programmes of technical colleges appear to be deficient in frameworks and support implements to bridge theory and practice. As a result, several institution-based supervisors are incapable to support the students in need of facilitation in learning before, and after their work/ placements. It is unacceptable that supervision should be given less consideration and handled without adequate recognition of the significance it deserved [38], [39]. The position of supervision, ascertaining the supervisors' activities, and exploring the relationship between supervision and learning should be properly considered to develop an efficient WBL programme [40], [39]. Supervisors, therefore, should be part of the pre-placement arrangement events with students, as well as post-placement assignments to support them in consolidating their learnings and transition back to full-time study [39].

C. ASSESSMENT IN WBL PROGRAMME

Assessment is the procedure of collecting and discoursing data from various sources for students to gain a deep understanding of learning and decide on their learning experiences.

Choosing assessment tools for a course is an important aspect of the teaching and learning process. Assessment is important because it verifies the effects of learning attainment. Learning from training in WBL is a cooperative, relational, discursive, articulated, and process that varies significantly from academic learning [42]. Generally, assessment is a process, therefore, it is usually effective when it entails a linked series of activities undertaken over time. The generic attributes and employability skills that are assessed in WBL such as professional and ethical behaviour, communication skills, teamwork skills, resource management skills, critical thinking, and problem-solving skills are different from academic achievements.

Therefore, WBL performance evaluation cannot be regulated by fine distinctions, however, such appraisal must reflect a range of ways students show the learning results [43]. Effective assessment guidelines should, therefore, be designed by the institution and ensure that it is implemented to assist students to achieve the learning outcomes [15]. Student evaluation routinely includes a project task, performance or report, and reflection including process and outcome analysis taking into account the ethical and organizational contexts [44].

Besides, students would be able to evaluate their performance and express the learning outcomes they have gained at WBL, such as teamwork skills, adaptability skills, critical thinking abilities, problem-solving competencies, communication abilities, initiative aptitudes, and plan on their current learning [15]. For the appraisal of soft skills, different and extreme sources of knowledge are recommended for assessment mechanisms such as up-to-date reports of assignments and reflections in WBL, student journals, commentaries from managers, and a direct reflection of proficiencies executed in workplace settings, and the capability of the relevant industry standards [45]. Peer-assessment, self-assessment, and/or assessment by academics through log booking, portfolio development, periodicals, and post-experience reviews and performances may be implemented by WBL to evaluate students' soft skills [46]. Therefore, for the successful incorporation of soft skills, students should be trained and guided on the kind of assessment they need during the WBL programme.

II. OBJECTIVES OF THE STUDY

Given the graduates' inadequate soft skills and the indiscriminate application of inappropriate teaching methods concerning the high rate of unemployment; it would be beneficial to critically investigate the perception of technical teachers on the components of WBL considered suitable for fostering soft skill, and explore the implications for the development of a WBL conceptual framework to effectively incorporate soft competencies among students of technical colleges. Hence, this investigation has the following objectives:

1. To determine the components of WBL that are considered suitable for fostering soft skills among technical college students.

2. To determine the components of soft competencies considered suitable for incorporation among students of technical colleges.
3. To establish the relationship between the components of WBL and soft skills that make up the structural model.
4. Propose a WBL conceptual framework for integrating soft skills among students of technical colleges.

III. HYPOTHESES OF THE STUDY

The following outlined hypotheses demonstrate the predictable connection between the study's independent and dependent variables:

- i) The connection between preparation and incorporation of soft skills among technical college students is significant;
- ii) The association between supervision and development of soft skills among technical college students is significant;
- iii) The nexus between assessment and the incorporation of soft skills among technical college students is significant.

IV. THEORETICAL FRAMEWORK

The theoretical framework of this study is grounded on a combination of experiential learning theory and sociocultural theory. In 1984 Kolb established the theory of experiential learning. The theory defines learning as the mechanism by which information is generated through experiential transformation. The experience emerges from the synthesis of the practice of grabbing and turning [40]. Kolb's idea was founded upon John Dewey's educational ideology. The theory comprises four phases of two-stage learning which define two dialectically interrelated methods of acquiring experience.

Specifically, researchers interpreted the concept of WBL as connoting the four learning phases in experiential learning theory – the practical stage in experience occurs when students engage in WBL, theoretical contemplation may occur in two: students can choose to reflect individually or formally with the institution-based supervisor or industry-based supervisor along with other peers participating in the WBL. With this reflection, the students integrate the practical knowledge related to course principles and hypotheses into the theoretical conceptualization level. Finally, at the active experimental level, students find the course templates for the subsequent WBL lesson to carry out their learning assessment [48], [49].

Students involved in WBL are identified as having direct ties to the philosophy of experiential theory of learning [38]. For instance, WBL provides the opportunity for learners to attain social, intellectual, emotional, spiritual, and political experiences in an atmosphere that a student can reproduce and independently assess achievement and failure of learning in association to course theories [50], [51]. Similarly, other scholars have recognized that experiential learning philosophy promotes student learning outcomes varying from the unique trait of the learner, key subject skills, and generic skills required to succeed in the world of work [45].

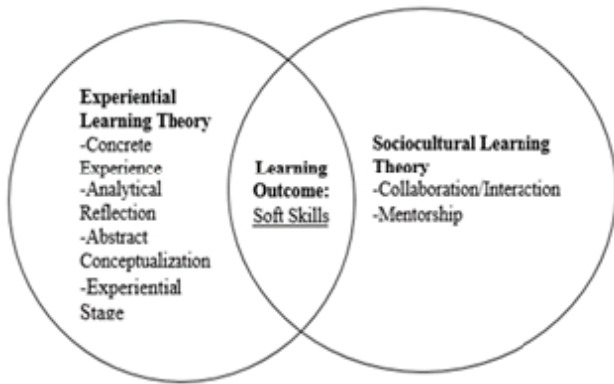


FIGURE 1. Theoretical model of the relative effects of experiential learning experiences and social support on effective development of soft skills.

Also, the theory supports instructional experiences between teachers and students in a setting where pedagogical encouragement is a necessary ingredient for acquiring information [46]. The ideas in this hypothesis demonstrate that WBL learning helps learners in terms of evaluation and appraisal as well as successful pedagogical approaches when helping to satisfy group needs.

Vygotsky’s sociocultural theory of human learning delineates learning in society or culture as a social process and the beginning of the human intellect. The prime theory of the theoretical framework of Vygotsky is that social interaction plays a central role in cognition development. Vygotsky concentrated more on how social influences enhance improvement. The basis of a productive WBL system is the establishment of strong collaborations with industries, which grow into permanent, mutually beneficial relationships [47]. Such collaborations afford not only a structure for the WBL environment but also permit professional career advancement with a social and cultural background.

Dewey’s Foundational Research [48] points out that interactions can enhance learning among students; hence, a true partnership needs development and learning among all parties involved. In regards to WBL, those parties include the student, teacher in the classroom, and mentor in the workplace. Besides, the sociocultural theory focuses on how adults, peers, attitudes, and cultural beliefs influence and affect how learning takes place. Through interaction, institution-based supervisors and industry-based supervisors who are supportive role models, provide guidance and feedback as they supervise WBL students’ activities, hence, facilitate the integration of relevant skills among the students [49]. Figure 1.1 depicts the relevant influences of experiential learning experiences and social support on the integration of soft skills through a WBL programme at technical colleges.

V. METHODOLOGY

The target population for this research consisted of technical teachers from Nigeria’s north-western public technical colleges. The data gathered from the aforementioned technical colleges was held during the 2019 academic session [50]. Technical teachers were deemed fit to be respondents for

TABLE 1. Reliability of the instrument of study.

S/N	Factors	Cronbach alpha	No. of items
1	Preparation	.820	7
2	Supervision	.849	7
3	Assessment	.760	9
4	Soft skill incorporation	.856	7

this investigation because of their experience as teachers who have been adequately trained on theories of learning, various teaching methods, and the appropriate principles of application of the teaching methods. And as a result, they have significant skills for pinpointing and providing valuable learning opportunities for students in the workplace environment. Besides that, technical teachers are responsible for the planning, posting, and supervisory activities of students engaged in WBL in Nigeria. The research population was established by 302 technical teachers from 22 Government technical colleges. Following the sample size determination table, 268 participants were selected as the right sample size [51].

The mixed nature of the population necessitated the use of a stratified random sampling technique to pick the 268 from the population for the study. The advantages of this technique which include its better accuracy than a simple random sample of the same size informed its application for the study [52]. 240 were retained for omitted data and other blemishes after analyzing the completed questionnaires, signifying a response rate of 89.5 percent. Four objectives were advanced to direct the analysis, and three hypotheses were evaluated at the 0.05 significance point.

The structured questionnaire of 30 items was scrutinized by specialists in technical and vocational education for both face and content validity before its utilization for the collection of data from respondents. The three independent variables: preparation, 7-items, supervision 7-items, and assessment 9-items; while the dependent variable, soft skills incorporation has 7-items. A 5-point Likert scale style was adopted for the study, one being the lowest and the uppermost five. Cronbach’s method was employed to assess the internal accuracy of the questionnaire items in Table 1. The logical basis for adopting the survey research design is that data was collected through a questionnaire on the activities needed to enhance the growth of soft skills through WBL among technical college students.

Questionnaires were administered to the two hundred and sixty-eight (268) technical teachers from the 22 public technical colleges in Nigeria, and the data obtained were analyzed using SPSS to assess the reliability and validity of the research constructs. The Cronbach alpha of a variable must be 0.7 to have a consistent result [53]. Consequently, the results in Table 1 prove that the study’s structures are reliable; planning, supervision, assessment, and soft skill incorporation are reliable since their values are above 0.7.

A multivariate method of statistical analysis, structural equation modeling (SEM) was employed through Analysis Moment of Structures (AMOS) version 20 to determine structural relationships of the constructs of the study [54]. For extracting Maximum Likelihood Estimation (MLE) from a covariance matrix, AMOS used several goodness-of-fit indices. A recommended set of goodness-of-fit metrics by Hair *et al.* (2014) to determine a proposed model was used throughout this review. Evaluation of the fit model relied on various parameters like an absolute misfit and relative fit indices. The actual misfit indices included the approximate square root mean error (RMSEA) [56], as well as relative performance indexes like the Tucker Lewis index and the collective match index: CFI, TLI, and IFI [57]. A Model is considered to be acceptable if the indices show: i) the CMIN / df value is between 1 and 5; (ii) the CFI, IFI and TLI indexes are nearly 1.00; and (iii) the 0.08 or less RMSEA index indicates a reasonable error and is satisfactory [58].

VI. FINDINGS/RESULTS

Deciding the structural measurements is an essential aspect of the investigation, in particular, the unidimensionality of the measure, whereas the objects are in a separate structure before SEM is implemented [59]. Of the 30 items, the report collected and used the results of exploratory factor analysis (with varimax rotation). The factor loading for each of the 30 products exceeded 0.5 and was regarded as good and statistically substantial [60]. The thumb rule to classify significant loadings such as $\pm 0.30 =$ minimum, $\pm 0.40 =$ important and $\pm 0.50 =$ practically relevant [57] was adopted for this study. Kaiser-Meyer-Olkin (KMO) and Bartlett's test were utilized in this investigation to determine the data quality and sampling adequacy. The result indicates a KMO value of 0.808 that matches the expected KMO value of > 0.5 , while Bartlett's test ($\text{Chi} = 5786.575$, $p < 0.05$) has been established to be appropriate for a full analysis of the variables (Babin & Anderson, 2014). The investigation utilized SEM to determine the impact of the exogenous variables on the dependent variable of the study. The empirical rationale for implementing SEM in this study is its guidelines for applying a confirmatory approach to data analysis by defining the correlation between variables; its methods for mixing non-observed and observed variables, and its ability to model multivariate interactions and calculation of the direct and indirect effects of test variables [64], [67].

A. THEORIZED MODEL OF NEXUS AMONG THE CONSTRUCTS OF THE STUDY

Determining the measurement model implies an indispensable step taken to efficiently analyze data through AMOS as related to the structural model [68], [60]. The measurement model was considered by Awang as discriminating validity which generally means the validity of the construct. In this case, therefore, the items in each construct must be well-connected to guarantee the accuracy of the constructs, hence, all the redundant objects in the constructs would either

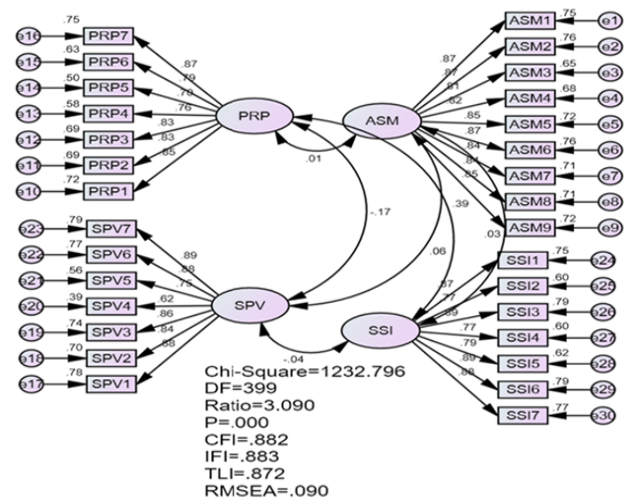


FIGURE 2. Theorized original measurement model (Pooled CFA) of nexus among the research constructs.

be removed or structured for the tricky observed variables. The delineation of the estimate comprises certain critical elements of the requirements for the quality of a fit structure. Nonetheless, the pooled-CFA procedure was implemented for this analysis to remedy the model identification challenges which researchers encounter for each measurement model during the CFA procedure [62]. The combined structures according to Awang, would enhance the model's degree of independence.

Figure 2 defines the theorized original measurement model (pooled CFA model) of the study construct relationships: preparation, supervision, assessment, and incorporation of soft skills. The values obtained for the original model estimates are: Chi-Square = 1232.796, DF = 399, Ratio = 3.090, $p < .001$, CFI = .882, IFI = .883, TLI = .872, RMSEA = .090. Consequently, the model did not satisfy the conforming fit criterion goodness based on the values attained. As a result, the modification was necessary to enhance the model to fulfill the specifications for the matching functionality.

The model's fit quality (Figure 2) indicates that the model could be further modified to improve its quality. The model was then checked to identify variables with factor loading below 0.5, error terms below 0.25, and modification indexes (MI) above 15. The analysis showed that the SPV4 component has a small factor load of 0.18 (< 0.50) and a low measurement error of 0.17 (< 0.25). Consequently, it was dropped.

The model was then run and the output signifies that the fitness indexes could not reach the required level even though the loading factors and error conditions were above 0.5 and 0.25 respectively. This signals that some items in the model are redundant of each other; therefore, MI was inspected to fish out the redundant items. Items SPV5, PRP4, and ASM9 were appropriately removed (one after the other) as MI values of more than 15 for each of the three items were observed. The following values were obtained after trimming objects SPV4, SPV5, PRP4, and ASM9 in Figure 3:

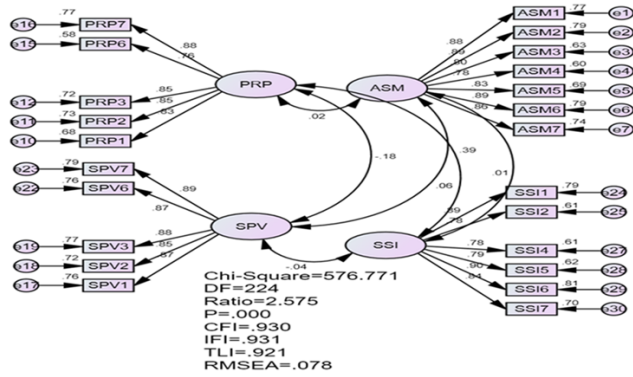


FIGURE 3. Theorized revised measurement model (Pooled CFA) of nexus among the research constructs.

TABLE 2. Summary of discriminant validity index for the constructs.

	PRP	SPV	ASM	SSI
PRP	0.83			
SPV	-0.18	0.87		
ASM	0.02	0.06	0.85	
SSI	0.39	0.04	0.01	0.83

Chi-Square = 576.771, DF = 224, Ratio = 2.575, $p < .001$, CFI = .930, IFI = .931, TLI = .921, RMSEA = .078; The requirements attained in Figure 3 conformed with the criteria laid down (Winter et al., 2009) and thus meet the corresponding suit criterion goodness.

The discriminating validity of the latent constructs was tested to alleviate multicollinearity complications. Discriminant validity indicates to what extent the measurement model structures are unrestricted by unnecessary indicators. Furthermore, if the relationship between independent variables does not surpass 0.85 [63], it is believed that a model attains discriminating validity. According to Babin and Anderson [57], for analysis constructs, the AVE values in the diagonal axis of the association matrix should be greater than those in the columns and rows, to obtain discriminating validity. Accordingly, the discriminating validity of those constructions has been achieved as specified in Table 2.

B. FACTORS LOADING, COMPOSITE RELIABILITY, AND AVERAGE VARIANCE EXTRACTED

Similar AVE is the measure that is examined to reveal the collective aggregate of the variance of the measured variable and is accountable for the major latent construct measurement error [64]. AVE refers to the mean amount of variance that can be represented by a construct for the objects. Table 3 presents the Average Variance Extracted (AVE) and Composite Reliability (CR) of all reflective constructs attained by scrutinizing the data through exploratory factor analysis (EFA). For all reflective constructs, the AVE is ranged from 0.60-0.81, far higher than 0.50, the recommended value [59]. Also, the entire reflective variables have CR values of 0.85-0.95, higher than the suggested value of 0.6 ((Babin & Anderson, 2014;) Chan et al., 2007) and are thus appropriate for

TABLE 3. Factors loading, composite reliability, and average variance extracted.

Code	Construct Items	Factor Loading	CR	AVEs		
Preparation						
PRP1	Identification of students educational needs enhance the effectiveness of the WBL programme	0.83	0.920	0.697		
PRP 2	Piloting of WBL programme of chosen industries enhance the efficiency of the WBL programme	0.85				
PRP 5	Involving employers in curriculum planning enhance the efficiency of the WBL programme	0.85				
PRP 6	Career awareness activities for students enhance the effectiveness of the WBL programme	0.76				
PRP 7	Career exploration activities for students enhance the effectiveness of the WBL programme	0.88				
Supervision						
SPV1	Adequate support for supervision enhances the effectiveness of the WBL programme	0.87			0.761	0.941
SPV 2	Knowledge of the role of supervision enhances the effectiveness of the WBL programme	0.85				
SPV 3	The effectiveness of the WBL programme is enhanced by the adequate possession of supervision skills	0.88				
SPV 6	Supervisor's good knowledge of the goals and objectives of the industry enhance the effectiveness of the WBL programme	0.87				
SPV 7	Collaboration between institution-based supervisor and industry-based supervisor enhance the effectiveness of WBL programme	0.89				
Assessment						
ASM1	The efficiency of work-based learning is enhanced by delivering quality feedback information	0.88	0.719	0.947		
ASM 2	Facilitating the development of self-assessment enhance the efficiency of the WBL programme	0.89				
ASM 3	Appropriate application of assessment information enhance the effectiveness of the WBL programme	0.80				
ASM4	The efficiency of the WBL programme is enhanced by encouraging good time and effort on the task	0.78				
ASM5	The efficiency of the WBL programme is enhanced by monitoring progress continuously in the assessment	0.83				
ASM6	Facilitating the development of self-assessment enhance the efficiency of the WBL programme	0.89				
ASM7	The efficiency of the WBL programme is enhanced by the appropriate choice of assessment tools	0.86				
Soft skills incorporation						
SSI2	Critical thinking skills	0.89	0.691	0.931		
SSI3	ICT skills	0.78				
SSI4	Teamwork skills	0.78				
SSI5	Problem-solving skills	0.79				
SSI6	Resource management skills	0.90				
SSI7	Entrepreneurial skills	0.84				

exploratory research. Consequently, the findings of the measurement model described in Table 3 show that the constructs at $p < .05$ are statistically significant based on their estimates of parameters.

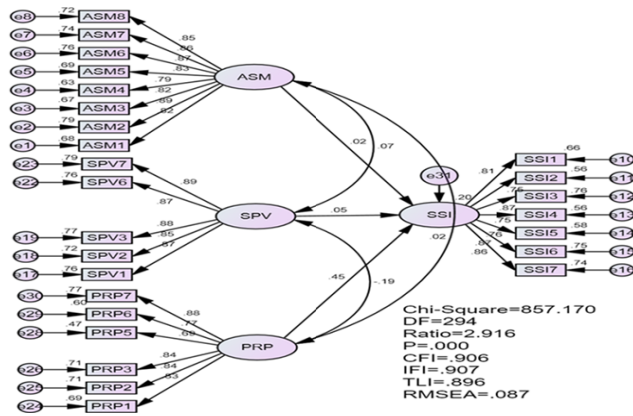


FIGURE 4. Original structural model of the effect of the exogenous variables on the endogenous variable.

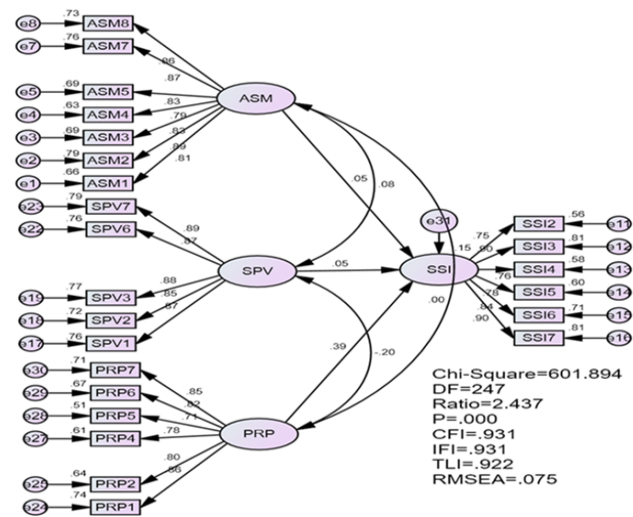


FIGURE 5. Improved structural model of the impact of the independent variables on the dependent variable.

C. THEORIZED MODEL OF THE IMPACT OF INDEPENDENT VARIABLES ON THE DEPENDENT VARIABLE

In keeping with the study hypothesis, mounting the structural model involves using structural equation simulation methods to describe the relationship that exists among the constructs. Figure 4 shows the original structural analysis of the effect of the independent variable on the dependent variable. It shows the fitness indices for the latent variables in the model. Nevertheless, after achieving the models’ reliability and validity, the initial model has values such as: Chi-Square = 857.170, DF = 294, Ratio = 2.916, $p < 001$, CFI = .906, IFI = .907, TLI = .896, and RMSEA =.087. Grounded on the obtained values, the model adjustment became appropriate in this situation, as it did not follow the match requirement norm.

The structural model updated for the study is shown in Figure 5. For a newly developed scale, the factor loading must be higher than or equal to 0.5 [65]. Therefore the model was restructured to improve the suit indices’ goodness according to the SEM/AMOS requirements. In addressing the problem to achieve the parsimonious unidimensionality, objects that

TABLE 4. Standardized weights of regression and their importance in the entire path model.

		Estimate	S.E.	C.R.	P	Label
SSI	<--- ASM	0.131	0.065	11.43	***	Important
SSI	<--- SPV	0.172	0.052	1.97	0.024	Important
SSI	<--- PRP	0.142	0.066	-1.81	0.037	Important

have factor loading below 0.5 were plunged one after another (starting at the lowest value). To avoid multicollinearity, it is important to delete objects with MI indices greater than 15. Accordingly, in this study, items PRP3, ASM6, and SSI1 have been removed using the appropriate method (one at a time) for having variation index values greater than 15. After adjustment of the model the following values were obtained: Chi-Square = 601.894, DF = 247, Ratio = 2.437, $p < 001$, CFI = .931, IFI = .931, TLI = .922, RMSEA = .075. The revised model’s performance indicates all of the suit indexes were achieved.

VII. HYPOTHESES TESTING

The theorized relationship between the independent variables on the dependent variable was calculated using SEM/AMOS version 20. A basic rule of judgment (T-value 1.96, p-value 0.05) recommended for a significant relation by Byrne *et al.* [66] has been used in this study to assess the magnitude of the path vector among exogenous and endogenous variables. The results of the path analysis indicate that: i) the probability of achieving a critical ratio of as much as 0.142 in total value is smaller than 0.037 as indicated in Table 4 of the AMOS equations; suggests that WBL’s preparation (planning and design) practices have a major positive link with the development of soft skills among technical college students. Likewise, ii), the likelihood of achieving a vital ratio at a total value of as much as 0.172 is less than 0.024, as noted in the AMOS assessments (Table 4); meaning that WBL supervision has an important positive association with the integration of soft skills among technical college students. Nonetheless, iii), as shown in the AMOS calculations in Table 4, the chance of achieving an absolute value of a critical ratio as much as 0.131 is less than 0.001. That is, an important positive association exists between the WBL assessment and the students’ integration of soft skills at the technical college.

VIII. DISCUSSION

In the present investigation, an important positive connection was discovered between Preparation (planning and designing) in WBL and the integration of soft skills among students of technical colleges. Preparation in WBL has been acknowledged for enhancing positive occupational engagement in institutions of learning [73], [74]. Students need an enabling learning environment of activity-based that encouraged more relationships to guarantee a range of constructive opportunities for the incorporation of relevant skills. Planning and designing in WBL programmes are intended to address the needs of students’ skills and abilities required of students on graduation. The result is therefore in line with Chadsey and Beyer [69] who claimed that enabling learning environments,

resources, and partnerships assist students in developing their skills and engaging co-workers in their growth and creation of culture. Moreover, the finding is also consistent with West [70] who believed that the planning of the learning environment in WBL will thrive and improve the teaching and learning of effective skill development. This will particularly be effective when the lesson plan is prepared using a more constructive approach [71].

From the data analysis, the technical teachers' perspective on supervision in WBL has been described as having an important positive connection with the integration of soft competencies among technical college students. Supervision in WBL is vital as it encourages work-study experience and enhances effective student learning. Despite the programme design or its weakness, students who learn on the job, learn differently, and experience different things. Accordingly, this observation is consistent with Pearson *et al.* [72] which argued that supervision gives both students and their supervisors the ability to collaborate to enhance student performance. Without the supervision of a proficient and attentive learning supervisor, when and how students learn and make use of what, the study will be diminished. Besides, the implementation of the teaching-learning process is enhanced by effective supervision, consequently, Nur *et al.* [73] emphasized the need to enhance the implementation of the teaching-learning process for adequate development of relevant skills among learners. Therefore, supervision would play a significant role in the learning experience of work programmes.

Nevertheless, an important positive association has been revealed between WBL assessment and the incorporation of soft skills among students of technical colleges in Nigeria. WBL assessment offers students opportunities to improve their abilities through constructive thinking, using this approach to format entries through a 'learning log' held on placement, and for a reflective analysis to integrate soft abilities accordingly. The finding of this investigation is therefore in line with Ian and Gaye [1] who maintained that assessment in WBL helps to set up a three-way agreement that works well between student, employer, and institution for the attainment of students learning outcomes. They further state the benefits of assessment to the three stakeholders to include: student experience is challenging but satisfying; employers enjoy its relevance to the work context, and the institution enjoys its provision of evidence of achievement at an appropriate level.

IX. LIMITATIONS

There are challenges and pitfalls when performing research; however, the researcher must mediate these challenges and limitations to be objective and succinct without imperiling the study's reputation and efficiency. Nevertheless, the study's goal must always be in focus. The development of the WBL conceptual framework is intended to serve as a reference for the successful integration of soft competencies among technical college students. The execution of the WBL experience involves the collaboration of three stakeholders:

the institution, the student, and the employer. However, the investigation for the development of the WBL conceptual framework was limited to the institution (technical teachers) who are typically responsible for the coordination of the collaboration process. This investigation has been limited by other factors, such as; involvement in the study was charitable; the study group has been limited to technical teachers from public technical colleges in North West Nigeria; therefore, application of study results may be limited to institutions within the study group.

X. CONCLUSION

Current economic trends, challenges of the labour market for scholastically discharged young adults, loss of social community ties, and inadequate social means among many students have increased youth risk of disengagement from work. These drifts have challenged technical institutions to engage in lively teaching methods that could guarantee adequate integration of relevant skills among students. Consequently, this investigation aimed to advance a WBL framework for integrating soft competencies among students at technical colleges.

In the data analysis process, CFA techniques were used; redundant objects were either removed or restricted in the model to achieve unidimensionality from the work performed for the SEM method. At the end of the operations, convergent integrity, internal reliability and construct durability of all structures had been accomplished. Additionally, the discriminant validity of the model was reached based on the correlation values. To achieve the actual, significant structural model, the form of association between constructs was established and re-specified in the path analysis. The SEM study found that: preparation (planning and designing), supervision, and assessment each had an important positive relationship with the integration of soft competencies among students at technical college. These results support the effectiveness of WBL as an educational resource for incorporating soft skills among Technical College students.

XI. CONCLUSION

Given Nigeria's high unemployment rate, TVET institutions should be engaged in making their students employable in the 21st Century workplace. Therefore, the results of this investigation should provide curriculum planners with the necessary information to upgrade the curriculum of the technical institutions to fit the WBL elements considered essential for the effective incorporation of soft aptitudes among the students. Grounded on the research results: i) The government should formulate and implement suitable policies to enhance planning and designing in WBL programmes, particularly, to address the needs of students for adequate incorporation of soft skills at technical colleges; ii) In the implementation of workplace experiences, technical teachers should employ the WBL-recognized elements for effective incorporation of soft skills among technical college students. Implementation of any form of WBL programme at the technical colleges will do little or no improvement in the potential orientations of

the students' professional participation without a particular consideration to enhancing structures of effective preparation (planning and designing), supervision, and assessment of students in workplace experiences. Close examination of the literature and the foregone exposition strongly show the necessity for investigation on the efficiency of teaching and learning, the challenges, and methods to facilitate learning and social modification in the WBL environment. Therefore, research is needed to determine the impact of assessment techniques on the relationship between WBL and the incorporation of soft skills among students from technical colleges to enhance the development of soft skills.

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