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EFFECTOFKOLB'S 4 – STAGECYCLEMODELOF EXPERIENTIAL LEARNINGONSTUDENTS'INTEREST INVEGETABLE CROPPRODUCTION

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Abstract

This study was designed to determine the effect of Kolb's 4-stage cycle model of experiential learning (E.L) on students' interest in vegetable crop production. The study adopted a pretest posttest, non - equivalent control group design. It was carried out in Anambra State, with a population of 26,139 Senior Secondary School students. The sample was the entire 141 SS1 students from four sampled schools in Awka Education Zone. Purposive sampling technique was used to select the schools. The instrument for the study was Practical Agriculture Interest Inventory (PAII), which was developed by the researcher to gather information on the students'interest in Agricultural practical activities before and after treatment. The instrument was validated by three experts from Agricultural Education Department UNN. It was trial tested to determine its reliability coefficient, which was found to be 0.88 using Cronbach alpha. Data collected were analyzed using the mean to answer the research questions while t-test was used to test null hypothesis. The result revealed that Kolb's 4-Stage Cycle Model of Experiential Learning was an effective tool that captures students' interest in vegetable field crop activities. Based on findings, the researcher recommended that curriculum planners should incorporate the use of Kolb's model in teaching production agriculture, because it makes teaching and learning activity-based. The model being innovative necessitates the re-training of teachers on its application and delivery strategy.

Key Words:Kolb's Model,Experiential Learning, and Interest.

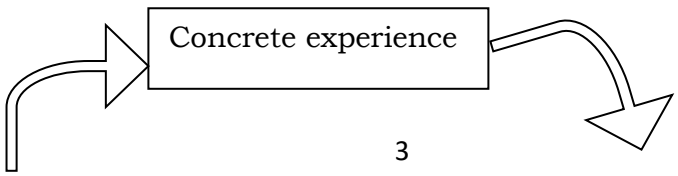
Introduction

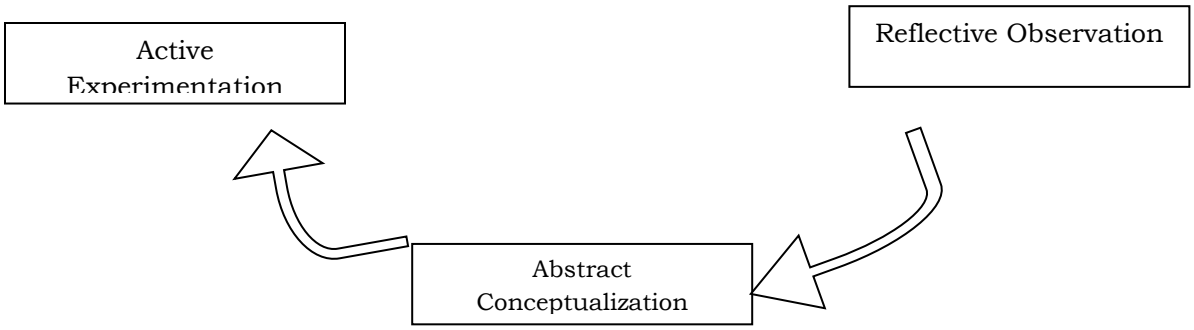
Crop production is a branch of agriculture that deals with the production of crops for man's use.It is only through cropproduction that varieties of food and other services are made available to man and animal. This aspect of Agriculture is full of activities, drudgery and time consuming.Teachers find it very difficult to drive students into practical aspect of crop production even in the production of simple vegetable garden. It is only the students that have special interest that can afford to take part in it.Interest,the drive that makes the learner participates voluntarily in a certain

activities,which Merriam (2003) explains as the feeling of one whose attention, concern or curiosity is particularly engaged by something. That is to say that interest involves concern and draws attention or arouses the curiosity of a person, otherwise, a persisting tendency to pay attention and enjoy some activities or contents. Harbo-Peters (2002) opined that interest comes as a result of eagerness or curiosity to learn not by force. The author expressed that a child develops interest if a particular stimulus (learning strategy or environment) is attractive, arousing or stimulating. The learner is bound to pay attention as the lesson is going on if the learning situation or strategy aroused his interest in the lesson.Nworgu (1992) identified four types of interest: expressed, manifest, tested and inventoried interest. The author described them as follows: Expressed Interest which is a verbal declaration of interest in an activity or object. The author further said that this type of interest can be measured using interviewing method, which is normally used to investigate the expressed interest.The next interest is manifest which goes with participation of an individual in an activity or acting on the object of interest. In this type of interest, the author said the individual subjectively declares his extent of like for an activity or object and actually manifest this by extent he takes part in the activity or interacts with or cuts on the subject.Tested interest refers to interest as measured by object test, where the students show his level of interest through his/her performance in an activity or interact with it several times to the extent that his actions would give accumulated relevant information which can be tested objectively. Tested interest is measured using an objective or achievement test which measure how much a student can solve problem in a subject area of his/her interest. Students who scores high in the test can be said to be highly interested in the tested subject. Those who score low in the test must have low interest in the subject, since they may not have put in adequate time and effort, though the author said that the assumption underlying tested interest is not always valid. The last is the inventoried interest which is the type of interest that gives subjective estimates of an individual's like and dislikes on a large number of item surrounding activities or object of concern (like occupation, school subject). It is usually listed in an interest inventory as developed and adopted by the researcher in this study in finding the students' interest in vegetable crop production practical done in the school. Interest in the context of this paper means the readiness and the urge of the students to participate in the vegetable crop production as a result of their interest aroused and stimulated by the teacher's use of Kolb's 4- stage model of Experiential Learning as a teaching strategy and method.

Experience according to Catherine (2001) is a practical contact with and observation of facts or events, a knowledge or skill gained overtime, an event which leaves an impression on someone. Experience being an event which leaves an impression on someone must be a good teacher in the process of learning. No wonder an adage says "Experience is the best teacher". Experience plays a central role in the learning process hence the concept should be given attention by educators. Experience in the context of this work, is exposing students to comprehensive practical activities in vegetable crop production through learning by doing, otherwise called experiential learning. Experiential learning as explained by Smith (2003) is process through which an individual, interacts with the environment thus makes discoveries and experiment with knowledge firsthand, instead of hearing or reading about others experiences. Experiential learning can be improved and enhanced through the use of deliberate tools, technique and strategies as in Kolb's model which compels students to be creative and interested.

Kolb in 1984 developed four components of the experiential learning model/cycle. David Kolb 4-stage cycle model of experiential learning according to Okafor (2014) isthe model which dominates experiential learning models of which there are many versions. The one people found most frequently quoted is that of Kolb's (1984) and the only one this study found interest in. It has 4-stages; Concrete-experience, Reflective-observation, Abstract- conceptualization – and Active- experimentation.





kolb's 4 stage cycle model of Experiential learning.

This model suggest that a participant has to be exposed to concrete experience (CE) followed by reflective observation (RO), then the formation of abstract conceptualization (AC) achieved via reflective thinking, planning and analyzing the learning activities or (learning experiences). Final stage is the conduction of Active Experiment (AE) to test out the newly developed principles/concepts. According to Okafor (2014) Kolb 4-stage cycle model of experiential learning (EL) captured Dewey's notion of continuity of experience, which Atherton (2002)in his Experiential learning theory showed how experience is translated through reflection into concepts. They are used in turn as guide for active experimentation and the choice of new experience. The model encourages an in-depth exploration of participants; facilitate teaching technique through the process of reflection. It can be used as an effective teaching method though to be effective; it should employ the whole learning processes from goal setting to planning, experimenting, observation, and finally reviewing. This complete process allows one to learn new skill, new attitude or even captures one's interest. Kolb (1984) also emphasized of his model as a tool that not only lead to students' mastery of the skill of subject matter but will stimulate their interest in the subject activities.

These 4 stages guide the teacher on how to carries out the agricultural practical or field work activities. Following the stages sequentially helps to promote mastering of a subject and arousing of students' interest. The steps in the use of Kolb's model, exposes students to experiences and involvement into concrete learning situations, these enable them to think and deduce new way of

achieving the same purpose. The role of a teacher in the use of Kolb's 4- stage cycle model is to help create an educational environment from which the learner will learn. Tremendous efforts have been expended in the study of the factors affecting academic performance especially in science and technology. Onyekwere (2001) stated that the degree of understanding by students depends on several interacting variables. The author stressed that the students readiness to perform and learn while the teacher is teaching can be super fluxed by other variables such as lack of interest among others.Interest being what guides readiness to act, it should be understood that its effect on students' academic performance will never be under estimated. Students' interest in learning is associated with student's anxiety to learn. That should be more reason Nworgu (1992) and Ale (2002), maintained that interest is not innate but learned. It can be developed through the activities of the teacher via his/her teaching methods and the students' activities. This calls for Agricultural science teachers to employ teaching strategy that stimulates and captures interest. It thereforebecomes an imperative that seeking for ways and enhancing the interest of the students in crop production field activities has to be sought. Hence the need to find out if students' interest in vegetable crop production can be raised or induced using Kolb's 4-stage cycle model of E.Lfor better performance

Research Objectives: The objectives of this study are to determine the:-

1. Effect of Kolb's 4-stage cycle model of experiential learning (E.L) on students' interest in vegetable crop production.
2. Effect of Kolb's 4-stage cycle model of experiential learning (E.L) on students' performance in vegetable crop production
3. Interaction effect of interest and performance scores of students exposed to vegetable crop production using Kolb's 4- stage cycle model of EL.

Research Questions: The following research questions were answered in this study;

1 What is the effect of Kolb's 4-stage cycle model of experiential learning (E.L) on Students'performance in vegetable crop production

2 What is the effect of the Kolb's 4-stage cycle model of Experiential Learning E.L. on the students' interest in vegetable crop production?

Hypotheses:

$H0_{1:}$ there is no significant difference in the mean performance scores of students taught Vegetable crop production using Kolb's 4- stage cycle model of and those taught without it.

$H0_2$There is no significant difference in the mean interest rating scores of students in vegetable crop production before and after being exposed to Kolb's 4-stage cycle model of Experiential Learning EL..

$H0_3$:There is no significant interaction effect of interest and performance scores of students exposed tovegetable crop production using Kolb's 4-stage cycle model Experiential Learning. EL

Methodology:

The study adopted quasi-experimental design based on pre-test, post-test, non-equivalent control group. The researcher randomly assigned classes to the experimental and control groups. The use of quasi-experimental design was necessary in order not to disrupt the normal classes of the students and school time table for the experiment. The use of intact classes make the reactive effects of experimentation to be more easily controlled thereby making subjects less aware of an experiment being conducted than when subjects are drawn from classes and put into experimental classes as in true experimental design. Two of the four schools were randomly assigned to treatment classes while the other two were assigned to control classes. This study

was carried out in Anambra State, which has six education zones. Population for this study was 26,139 senior secondary students from Awka Education zone of Anambra State. The sample for the study was 141 senior secondary school one (SS1) students. The sampled subjects were the entire senior secondary school students one (SS1) of the four schools used for the study. The four schools were purposively sampled from sixty one public secondary schools in Awka Education zone. All the four schools SSI classes were made up of a stream, therefore all students offering agriculture in their intact classes were used. Sixty-seven students were from two control schools and Seventy four were from the two experimental schools.

Instruments for data collection were two namely: Vegetable crop production performance Test.(VCPPT) and Vegetable Crop ProductionInterest Inventory (VCPII) The VCPPT instrument was made up of 40 multiple choice test items developed from the SS1 Agricultural Science curriculum on two vegetable crops used (tomatoes and fluted pumpkin). The instrument was developed based on Simpson's Taxanomy of psychomotor domain (Simpson 1972). This instrument was used to collect data on students' performance. It was developed by the researcher. The second instrument vegetablecrop production Interest Inventory (VCPII), developed by the researcher too to gather information on the students' interest in Vegetable crop production practical activities before and after treatment. The instrument has a 4-point response options, ranging from Strongly Agree (SA), Agree (A), Disagree (D), to Strongly Disagree (SD); With the corresponding values of 4,3,2 and 1 respectively. The respondents were expected to indicate their degree of agreement or disagreement on a number of statements (positive or negative) about vegetable crop production practical activities.

Both Instrument VCPPT and VCPII were face validated by three expertsfrom Agric Education Department in the Faculty of Vocational Technical Education, UNN, for suitability and clarity of

the statements, for any ambiguous or irrelevant statement and for addition of any otherrelevantitems. Based on comments, some items were modified and some removed. The VCPII contained thirty item statements to gather information in the students' interest in vegetable crop production activities. Twenty five items were found suitable after the validation.

The trial test for determining the coefficient of stability of vegetable crop production performance test(VCPPT) and Vegetable crop production interest inventory (VCPII) were carried out using test re-test reliability technique. The instruments were administered on forty equivalent samples of SS1 students in Awka Anambra State. The answer sheets were marked by the researcher and the scores kept. The tests were re-administered after two weeks to the same group, the answer sheets were marked too. The scores of the 1st and 2nd tests were correlated. The reliability coefficient of the VCPPT was found to be 0.88 using. Kuder Richerdson formular (K-R 20) was used, since the items of the tests are of multiple –choice type. Cronbach alpha technique was used to determine the reliability coefficient of VCPII and it was found to be 0.82. Cronbach alpha technique was used because the instrument was scored based on a 4 point scale.

The research assistants helped to administer the pre-test of VCPPT and collected the scripts at the end of the stipulated time. Students provided their answers inside the space within the question paper; they were expected to tick the option letter of their choice. These were for both pre-test and post test. Pre-test exam of the vegetable crop production performance test (VCPPT) was marked at the end of the examination by the researcher and the scores recorded against each individual subject. This provided data base for comparing the effect of the treatment on the variables at the end of the experiment. At the end of the treatment, the teachers (research assistants) administered the post-test to the experimental and control groups and scripts collected

at the end of the stipulated time. The researcher marked the scripts and recorded the students' scores on the post-test column for the two groups at the end of the treatment.

The VCPII was administered to the treatment groups alongside the pre-test of VCPPT for the students to rate after the VCPPT examination, the sheets were also collected when the students finished. The post VCPII sheets were given to the same treatment group to rate at the end of the treatment, and the sheets collected after.

Data collected were analyzed, using mean to answer all the research questions. That is the pre-test, post-test mean gain of each group- control and experiment, interest differentiation of the students in treatment group were all compared to determine the groups that performed better. The null hypotheses were tested using Analysis of Covariance (ANCOVA) for Hypotheses 1 and 3, while t-test was used for $Ho_1 2$. All, at 0.05 level of significance.

This study also employed experimental procedure and training of research assistants for proper use of Kolb's 4-stage cycle model as a strategy in teaching vegetable crop production.

Experimental Procedure

- Sample grouped into intact classes.
- Consultation of standard agricultural science curriculum on vegetable crop production.
- Determination of the basic topic in tomatoes and fluted pumpkin to cover.
- Determination of objectives required in the vegetable crops – tomato and fluted pumpkin.
- Lesson plan drawn – objectives of each topics on tomatoes and fluted pumpkin listed out
- Vegetable crop (Tomato and fluted pumpkin) broke into units of lesson topics
- Identification of the teaching materials/resources best suited for accomplishing each lesson topic.

- Designation of class-activities that involved stages of Kolb's model of E.L, that is for experimental class – to be reflected in teacher's activities and students' activities as shown below;

Kolb's Stages	**Steps: (Teachers/Students Activities**
1. Concrete experience:	- Students taken to the farm to expose them to practical activities/experiences going on in the farm. - Involve the students tocarryout the activity themselves under the teacher's supervision.
2.Reflective Observation:	- Students were allowed to touch, feel the teaching materials, and observe the activities going on. The teacher used questions to evoke and stimulate reasoning and learning in the students. - Student asked questions on the observed activities to understand the phenomenon.
3.Abstract Conceptualization	- Deducing of facts and principles and concepts surrounding the activities going on in the farm (on the growing of vegetable crops, tomatoes and fluted pumpkin). The abstract conceptualizations are as a result of exposure to concrete experience where the students, watch, observe and think critically brainstorming. Students madesuggestions on ways of achieving the production activities other than the way they observed.

4.Active Experimentation: - At this stage, the teacher allowed the students to put into practice what they have observed and internalized. The on-going activities can be the beginning of another cycle as concrete experiences. The stages/cycle continues.

- Designation of lesson plan for control group that pay less attention to field work, on the same topics as in experimental group. Most often, the teachers and students activities only occur in the classroom because the method often used was lecture method, Note taking are not student-activity-based. Even when in the farm there is no driving tool into real practical activities no sequence as in kolb's.
- Summary of the previous lesson to link with the day's lesson.
- For the new (lesson), test the students' previous knowledge (entry behavior) with generally stimulating questions that are familiar but in the direction of the lesson on tomato and fluted pumpkin.
- Ask questions to guide the learners.
- Give students opportunity to answer the questions and carryout the operation as indicated in the steps above.

Training of the Agricultural Science Teachers as Research Assistants for the Study

The researcher organized one week intensive training for the Agricultural Science teachers from the sampled schools to be used in experiment. The training was for both the control group and the experimental group teachers, each group was trained for one week on one of the schools of the teachers concerned, and the other group, another one week on an agreed

place. The training covered the purposes of the study, the use of Kolb's 4-stage cycle model of experiential learning, the topics in the lesson plan, the use of lesson plans, duration of the experiment, and the general conduct of the study. The administration of the pretest to the students took off immediately after training before the actual teaching begins.

Research Assistants were instructed on how to administer the instruments on the first day before the take off of the teaching. Vegetable crop production performance test (VCPPT) was administered as pretest to both the experimental and control groups after which the proper instruction started. The teachers in experimental schools taught using lesson plan (1) with steps on Kolb's 4-stage cycle model of experiential learning (Learning by doing). While the teachers on control groups, used lesson plan (2) which was prepared following traditional/lecture method of teaching in the school classroom that involve less of students' activities. All the necessary field trip, teaching materials as stated in the lesson plans of both group were followed strictly. The researcher observed and supervised the teaching process of both groups to ensure they did not deviate from the required process.

The study was conducted during the normal school periods. The regular school teachers teaching agricultural science in those SS1 classes in each of the sampled schools for the study were used. Each lesson lasted for eighty (80) minutes (two double periods of 40 minutes each). The experimental group tried and made use of the time judiciously. The whole teaching and treatment lasted for six (6) weeks, though the field work continued for the treatment group. At the end of six weeks, the post tests on the vegetable crop production performance were administered on both groups and the scores collected and marked.

The treatment groups were given Vegetable crop production interest inventory (VCPII) to rate their interest in the vegetable crop production activities before the commencement of the

treatment. The post VCPII was administered to the same groups at the end of the treatment for correlation.

Results.

Research Question 1

What is the effect of Kolb's 4-stage cycle model of experiential learning (E.L) on students' Performance in vegetable crop production.

Table 1: Mean of pretest and posttest scores of experimental and control groups in the vegetable crop production performance test (VCPPT**).**

		PreTest	**Post Test**	**Mean Gain**
Groups	N	$\overline{X}_1$	$\overline{X}_2$	
Experimental	74	40.39	54.15	13.76
Control	67	39.88	46.65	6.17

The data in Table 1 revealed that the experimental group that is those taught with the Kolb's 4-stage cycle model of experiential learning (E.L) had mean score of 40.39 and 54.15 for pretest and posttest respectively giving a mean gain of 13.76. The control group on other hand had 39.88 for pretest and 46.65 for posttest with a mean gain of 6.17. This result indicated that those students in the experimental group performed better in the performance test than the student in the control group. The result showed that the use of Kolb's 4-stage cycle model of E.L. had great effect on the student performance score in vegetable crop production.

Ho_1:- There is no significant difference between mean performance scores of students taught Vegetable Crop Production using Kolb's 4-stage cycle model of E.L and those taught without it.

Table 2: Summary of Analysis of covariance (ANCOVA) for test of significance between the mean scores of Experimental and Control Group in the performance Test

Source	Sum of square	DF	Mean square	F.	Sig.
Corrected Model	11812.169	2	5906.085	1. 0413	000
Intercept	4798.237	1	4798.239	55. 630	000
Pretest	13771.646	1	13771.646	159.667	000
Group	1769.584	1	1769.584	20.526	000
Error	11902.823	138	86.252		
Total	388491.000	141			
Corrected total	**27648.142**	**140**			

Significant at =<.05

The data in the Table 2 showed that F- Calculated value for mean scores of experimental and control in the performance test. The value of F- Calculated for the groups was 20.526 with a significance of F. at 000. The F. Calculated is less than alpha level of 0.05 as a result, the null hypothesis is rejected. The result indicated that there is a significant different between the mean performance score of students taught with Kolb's 4- stage cycle model of E.L and those taught without it. This implied that Kolb's 4-stage cycle model of E.L facilitated students' rate of understanding in Vegetable crop production.

Research Question 2

What is the effect of Kolb's 4-stage cycle model of Experiential Learning E.L. on the students' interest in vegetable crop production?

Table 3: Mean of Pretest and Posttest scores of experimental groups in the interest inventory

Experimental Group	N	$\bar{X}$	SD
Post test mean interest	71	3.2334	.248
Pretest mean Interest	75	2.8156	.65781
Mean Gain		0.4178.	

Table 3 revealed that the mean interest score of student before administration of the treatment was 2.82. The mean interest score after the administration of the treatment was 3.23 with a mean gain of 0.42 with this result; the mean interest score of students after the treatment (Kolb's 4-stage cycle of model of E.L) was higher than the students' mean interest score before the treatment. This is an indication that students' interest was stimulated with the use of Kolb's 4-stage cycle model of E .L.

H0$_2$ There is no significant difference in the mean interest rating scores of students in vegetable crop production before and after being exposed to Kolb's 4-stage cycle model of Experiential Learning EL..

Table 4: Summary of t-test for test of significance between the pre- interest mean and post interest mean score of experimental group in the VCPII.

Mean Interest	N	$\bar{X}$	SD.	Df.	T.cal	Sig.
Posttest mean Interest	71	3.23	0.25	144.	4.202	0.000
Pre-test mean Interest	75	2.85	0.66			

The data presented in Table 4 showed t-calculated values for mean scores of pre-interest of students and their post-interest mean to be 4.202 with significance of t at 0.000. This is less than 0.05 therefore the null hypothesis is rejected at 0.05 level of significance. The result indicated that there is a significant different between the mean interest score of students before and after the treatment. This result depicted that students' interest were aroused with some practical activities they actively participated, implying that seeing is believing and that experience captures interest.

Ho_3: There is no significant interaction effect of interest and performance scores of students exposed to vegetable crop production using Kolb's 4 –stage cycle model of E. L.

T**able 5:** Summary of Analysis of Covariance (ANCOVA) for the test of Significance of interaction effect of interestand performance scores of students taught vegetable crop production using Kolb's 4 –stage cycle model of E.L.

Source	**Sum of Square**	**DF**	**Mean squares**	**F**	**Sig.**
Corrected model	341.242	3	113.747	.475	.38
Intercept	19970.543	1	19970.543	86.944	.000
Pretest	196.904	1	196. 904	.857	.358
Interest group	121.736	2	60.868	.257	0.001
Error	16078.542	70	229.693		
Total	223862.000	74			
Corrected total	16.419.784	73			

Significant of E <. 05.

The data in table 5 showed that F-calculated for interaction effect of interest and performance of students stood at .257 at the significant of 0.001. This value of 0.001 is less than 0.05 therefore the null hypothesis is rejectedat 0.05 level of significant. This is an indication that there is significant interaction effect of interest and performance of students in vegetable crop production taught with Kolb's 4 – stage cycle model of experiential learning.

Discussion of findings.

The finding on the effect of Kolb's 4-stage cycle model of E.L on academic performance of studentsused as an instructional strategy was found to be a strong tool for improving students' academic performance in vegetable crop production than with lecture or traditional method of instructional delivery. The test of the first hypothesis using analysis of covariance indicated that the difference between the mean performance score of students in VCPPT taught with Kolb's 4-stage cycle model and those taught without it was statistically significant. The finding indicated that the use of Kolb's involvement in the learning process. The model exposed the students to various learning experiences from which students made out reflective reasoning /observation and as such acquire necessary skills involved in the learning process.

The finding of this present study which revealed Kolb's 4-stage cycle model as an effective tool for enhancing and improving students' performance could be due to its application steps which allowed students to partake in their own learning process. The model makes the instruction to be student- activity- based. This is in conformity with the research Osinem (2007) carried out. A study on activity based instructional facility utilization for enhancing learning experiences. It was a case study of agricultural science students in senior secondary schools in Abia State. His main purpose was to investigate the extent agricultural science teachers in secondary schools utilize activity-based instructional facilities for enhancing learning experience in secondary schools and factors that constrain them. The study adopted survey research design and participatory approach. A sample of one hundred and fifty (150) respondents were drawn from a population of four thousand and sixty one (4,061). Data collected was analyzed using means score and z-test statistics. Results of data analysis revealed the following findings: Only farmland for arable crops were often used, Poultry and livestock pen, orchard, nursery-fishpond are rarely or never used, Inadequate facilities, time allocation in the time- table, funding were

major constraints to activity based instructional facilities utilization. From the findings, the researcher recommended that secondary school teachers should be conducting agricultural practical operations with the same tools, equipment and procedures as in typical farming during the teaching-learning process. The researcher further stated that unless a sustainable and pragmatic approach is given to agricultural education in secondary schools; it will be difficult to solve the youth unemployment.

The finding on the mean interest scores of students before and after the administration of treatment indicated that Kolb's model actually stimulated students' interest in vegetable crop production. The t- test analysis for the test of significance level between the interest of students before and after being exposed to vegetable crop production VCP using Kolb's 4-stage cycle model was found to be significant. This finding is in agreement with the finding of Ezeugo and Agwagah (2000) who in their study "Effect of concept mapping on student's achievement and interest in algebra" reported that concept mapping model improved and enhanced students' ability and interest. The concept mapping model just as Kolb's 4-stage cycle model demands the learner to think critically and reflectively inquire into any learning process and activity.

The finding of the effect of Kolb's 4- stage model study in respect to students' interest also agrees with the finding of Ifeakor (2005). In the study, Effect of commercially produced computer assisted instruction package on students' achievement and interest in secondary school chemistry. The researcher observed that students taught with such method, whichwas more of student activity based, exhibited higher interest than students who were taught with ordinary classroom teaching process. This simply means that mode of instruction has significant effect on the interest rating of student. It should be noted that some factors that can likely engender interest in students in a science class like agriculture are those process that impart skill and those

that create room for students' involvement in the learning process. In the present study, the high overall interest shown by students after the administration of the treatment could be attributed to the skill they acquired as a result of the students' personal involvement in the production, which automatically spurred their interest. This finding is also in conformity with the assertion of Jersild and Tasch in Ifeakor (2005) who explained that children interest in any learning activity is as a result of learning experience they were exposed to. So, one would rightly say that Kolb's model of E.L has the ability of arousing and sustaining students' interest in vegetable crop production. The significant interaction effect of interest and performance of students foundin this study was also an indication that learning process and models are significant factors on arousing students' interest more especially in practical activities in agriculture. This truism is in compliance with the work of Imoko (2005) who found out that the use of concept mapping had significant effect on students' interest in trigonometry; it as well enhanced students' interest. The result of the study also vindicates Ezeugo's (1999) finding, that students exposed to concept mapping technique showed greater interest on the algebra content than those who were not.

Conclusion

Kolb's 4- stage model of experiential learningin this study revealed that the use of a model in instruction delivery is one of the surest ways of spurring the learner to make reflective reasoning/observations in the learning process hence able to acquire necessary skills inherent in the learning process, which in turn captures their interest in the activity. An experiential learning facilitated by a model captures students' interest in the learning process because students tend to learn fast when what the teacher teaches seem to be a replica of what they can actively involved in. That is to say that participation and involvement of the learner in the learning process enhances the rate of understanding of the learner. Such practices will lead to perfection. Finally,

Students were able to improve tremendously in their performances as a result of exposure to varieties of learning experiences depicting the importance of instructional materials in a learningprocess, especially student's activity base teaching strategy that help to expose students torudiments activities needed in the practical work. Interest wascaptured only when students work along with their teacher in the field, watching the teacher demonstrating in the field for them. Interest was also stimulated when students themselves partake on the activities, watching and observing all the stages in the process, seeing the inputs and the out puts, finding out problems and solving them together with the teacher. Such creates a good learning environment in a manner that students' interest to learn more is developed and greater performance recorded.

Recommendations

1. The use of Kolb's 4-stage model is an innovation which seems to be effective, hence the pre-service Agricultural science teachers should be trained on how to use and apply this model.
2. Curriculum in Agriculture should be strengthened to give attention to learning by doing (hand-on-activities.)
3. Agricultural science teachers should make teaching more of student activity based where students will partake in their learning process.
4. During field work activities, agricultural science teachers should do it along with their students so that students should learn from the teacher direct and develop that confidence and joy inherent in learning by experience.

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