JournalHomepage:-www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

ArticleDOI:10.21474/IJAR01/15229
DOIURL:http://dx.doi.org/10.21474/IJAR01/15229

RESEARCHARTICLE

THEINFLUENCEOFLABORATORYPRACTICEONMICROBIOLOGYEDUCATIONINUNIVERSITIESFOUNDINANAMBRASTATE,NIGERIA

EzendianefoandJosephineNgozi(BSc,MEd,MSc)
ChukwuemekaOdumegwuOjukwuUniversity.

ManuscriptInfo

ManuscriptHistory
Received: 18 June 2022
Final Accepted: 22 July 2022
Published: August 2022

Keywords:-
Microbiology,Teaching,Learning,Laboratories,School,AnambraState,Nigeria

Abstract

Thestudyinvestigatedtheinfluenceoflaboratorypracticeonmicrobiologyeducationinuniversitiesfoundin Anambrastate,Nigeria.Thesimplerandomsampling(SRS)techniquewasemployedduringtheselectionoffour(4)universitiesforthestudy.Thedesignofthestudywasthesurveydescriptivedesign.Seven(7)researchquestionsguidedthestudy.Thesamplesusedforthestudyconsistofonehundred(100)respondents.Theresearchinstrumentemployedwasthequestionnaire.Thedescriptivestatistics(meanandbarcharts)wasusedduringthedataanalysis.Theresultsofthestudyshowedthattherewerelaboratoriesintheinstitution;thelaboratorieswerewellequipped;therewerefunctioningbasicamenitieslikeelectricityandgoodwatersupplyintheschools;studentswerenotgivenaccesstoheuristicallyanddemonstrativelyusethelaboratoriesintheschools;lecturersdonotreferstudentstocarryoutlaboratorypracticeafterclassroomwork;thelecturersmonitortheirstudentsduringthelaboratorypracticesandstudentsperformedpoorlyinmicrobiology.Itwasthenevidentthatmajorityoftheuniversitiesdidnoteffectivelyemploylaboratorypracticeduringmicrobiologyeducationwhichmighthaveledtothepoorperformancesofstudentsasrevealedbythelecturers'logandprogressreportbooksofthestudents.Therefore,theneedtoequipandeffectivelyutilizethelaboratoriesformicrobiologyeducationcannotbeoveremphasizedandeffortsshouldbeearedtowardsupgradingthelaboratoriesandenlightening/enforcingbothlecturers/studentsontheneedtobeemployinglaboratorypracticeforeffectiveteachingandlearningofmicrobiology.

Introduction:-

Microbiologyinvolvesthestudyoflivingorganismsthatcouldhardlybeseenwiththenakedeyesexceptwhenmicroscopeisused.Thosemicroscopicorganismsincludebacteria,fungiandviruses(Aroraetal.,2012).Thesemicroorganismsareubiquitoes(Ezendianefo,2022;Umeakuetal.,2022)whichmakesitanecessitytostudythecourseeffectively.

Thestudyofsciencecanproperlybeappliedtothelaboratorystudyofthesubject.Inordertoknowwhatthefactsofscienceare,theymustbeseenandhandleddirectlyonthelaboratorytables.Thetextbooksandotherbooksarenotscience,butliterature.Booksarereallypoorliteraturefortheteachingofscience.

Thesuccessofeveryeducationalsystemdependsonthequalityandquantityofitsfactorsofproduction.Introducingcreativityandinnovationintoteclj.NaI'mssroommanagementskillsisapanaceaforstudents'highperformance(Onyalietal.,2016).

Corresponding Author:- Ezendianefo
Address:- Chukwuemeka Odumegwu Ojukwu University.

Laboratoryteachingdevelopsinthelearnertheabilityofinterpretingwhatheseesinthelightofexperienceandmakeshimthusa nobserverlater.

Workisdivided,notonlybetweendifferentjobsofthelaboratorysuchastheresearchers,engineersandtechnicians,butalsoint ermsofautonomy{shouldtheworkbeindividualoringroups}(Vinck,2010).

Inaclassroomtheteacherpresentsastatementfromabookaccordingtohisconceptionandtheneffortismadebythepupilsto reproducethestatementintheirownway.Inthelaboratorythepupilencounterstthefactdirectlywithouttheintermediatesteps whichinvolvetheteacherathoughthelatterisconcernedinassistingthethoroughexplorationofthefact.

Laboratoryworkisundoubtedlyofvalueinthecultivationofthemind.Itbringstheteacherandthelearnerinclosecontactandth usthepersonalityoftheteacherinfluencesthecharacterofthestudent.Inthelaboratory,thelearnerisfreetoworkinaccordance withhisconceptionandthereisnotbondageofauthority.

Inordertoachieveouraimofscienceeducation,weshouldmakesurethattheclassroomworkisadjustedroundthelaboratoryw orkandthateffortsaremadetoensurelaboratorysafetyvideosarebothrelevantandengaging(Matsonetal.,2007).

Havingknownthatthelaboratorymethodisoneofthebestmethodsofscienceteaching,itispertinentthatschoolsshouldhavepr operandwell-equippedlaboratories.Experimentsshouldbeorganizedforbetterteachingofmicrobiology.

Scienceteachingandlaboratorypracticalshouldalwaysgotogetherforeffectiveassimilationofscienceeducationandmicrob iologyeducationinparticular.

OnedistinctivefeatureofworkinOpenLabsisthephenomenonoftranslation,drivenbythedifferentbackgroundsandlevelsof expertiseofthepeopleinvolved(Fritzsche,2018).

ThedecisionofAnambraStateforthisresearchwasadirectresultofreasonsthatincorporatedtheproximityofthevicinitytothe researcher.

Finally,moreresearchesandimprovementmethodologiesareneededtofosterthehighrateofassimilationofmicrobiologyed ucationinvarioustertiaryinstitutionsaroundtheglobeinothertoproduceworld-classscientistswhichistheessenceofthisstudy.

StatementofProblem

Havingseentheroleofmicrobiologyinhumanexistenceandpreciselymedicalpractice,thereistheneedtoinvestigatetheacad emicperformanceofmicrobiologystudentsintertiaryinstitutionsfoundinAnambraState.

So,thisstudyinvestigatedtheinfluenceoflaboratorypracticeontherateofassimilationofmicrobiologyeducationamongstud entsinuniversitiesfoundinAnambrastate,Nigeria.

AimoftheStudy

Thisstudyaimsatevaluatingtheinfluenceoflaboratorypracticeontherateofassimilationofmicrobiologyeducationamongst udentsinuniversitiesfoundinAnambrastate,Nigeria

ObjectivesoftheStudy:-

Thefollowingobjectiveswereidelineatedforthisstudy:

Toanalyzetheperformancesofstudentsinvarioustertiaryinstitutionswhereequippedlaboratoriesareregularlyinuse.
Toanalyzetheperformancesofstudentsinvarioustertiaryinstitutionswhereequippedlaboratoriesarenotregularlyinuse.

ResearchQuestions

Thefollowingresearchquestionguidedthestudy:

1. Aretherelaboratoriesinyourinstitution?
2. Arethelaboratorieswellequipped?
3. Aretherefunctioningbasicamenitieslikeelectricityandgoodwatersupplyinyourschool?
4. Arestudentsgivenaccesstoheuristicallyanddemonstrativelyusethelaboratoriesinyourschool?
5. Dolecturersreferstudentstocarryoutlaboratorypracticeafterclassroomwork?

6. Dothelecturersmonitortheirstudentsduringthelaboratorypractices?
7. Dostudentsperformwellinmicrobiology?

AreaofStudy
ThisresearchwasdoneinAnambrastate.Themetropolisisoneofthethirty-six(36)statesofNigeriaandlocatedintheSouth-Easternregionofthecountry.

ThelocationofAnambrainNigeriais6°20'N7°00'E.

ScopeofStudy
Thisstudywaslimitedtotheinfluenceofhands-onpracticalontherateofassimilationofmicrobiologyeducationamongstudentsinuniversitiesfoundinAnambrastate.

LimitationofStudy
Inthecourseofcarryingoutthisstudy,thefollowinglimitationswereobserved:

Finance-
Thisisthebedrockoflimitationstothestudyasseveralareasoftheresearchproceedingsliketransportationandmaterialswere money-intensive.

MaterialsandMethods:-

ResearchDesign
Thisstudyemployedthedescriptivesurveytypeofresearchdesign.

SampleandSamplingTechniques
Forthisstudy,atotaloffour(4)universitieswererandomlysampledfromthepopulationofthestudywith100respondentsselectedfromamongthelecturersandstudentsfromeachofthesampledinstitutions.

SimpleRandomSampling(SRS)techniquewasemployedduringselectionbasedonseveralfactorsthatincludedtheproximitytotheresearcher.

Table1:-IdentitiesofUniversitiesandtheiralphabeticalRepresentations.

S/N	IdentitiesofUniversities	Locations
1.	Tansian	Oba
2.	COOU	Uli
3.	Madonna	Elele
4.	NAUTH	Awka

ResearchInstrument
Theresearchinstrumentthatwasemployedinthisresearchwasquestionnairesgiventorespondentsinthevariousuniversitiessampledin AnambraState.

Thesewereusedtocollectdatafromthestudents,lecturersandthelaboratorytechniciansineachofthesampledschools.

Thequestionnairewasstructuredbasedontheresearchquestionswhichenabledtherespondentstoindicatetheiropinion.

Aquestionnairewasdividedintofivesectionsnamely**SectionA**,**SectionB**,**SectionC**and**SectionD.**

SectionAwastherespondents'biographies;**SectionsB&C**wereconstructedfromtheresearchquestionswithoptionsprovidedfortherespondentstotickt heiropinionstothequestionsusingthemodifiedLikert'sratings.

SectionsD&Econtainstheothertworesearchquestionswhichallowedtherespondentstogivefreeresponsesintheirownchoiceofwords.

ValidityoftheResearchInstrument
TwocopiesofquestionnairesweregiventotwolecturersatTansianUniversityUmunyaObaCampus.Theyscrutinizedthequestionnairesandmadenecessarycorrectionswhichwereusedtoamend,wherenecessary,theoriginalcopybeforethefinalcopiesfordistributionwereproduced.

DataCollectionTechniques
ThequestionnairesweredirectlyissuedouttotheLaboratorytechnicians,LecturersandStudentsineachofthesampledschoolswhichwerecollectedattheendoftheircompletion.

Moreso,twoSecurityOfficersondutyfeaturedduringtheexerciseinordertoensureorderliness.

MethodofDataAnalysis
Inthisstudy,theinferentialordescriptivestatisticswasemployedduringthedataanalysiswhichinvolvestheuseofthemeanandthebarcharts.

Thecollecteddatafromthequestionnairesweregroupedtogether,tabulatedandusedforfurthercalculationsofthemeanandthebarchartswhileanalyzingthedata.

WhenrespondingtoaLikertitem,respondentsspecifytheirlevelofagreementordisagreementonasymmetricscaleforaseriesofstatementstherebycapturingtheintensityoftherespondents'feelingsonagivenitemonthequestionnaire.

Forthisresearch,thefollowingmodifiedformatforafive-pointLikertscalehasbeenemployednamely:
a=StronglyAgree;b=Agree;c=Neitheragreenordisagree(Unknown);d=StronglyDisagree;e=Disagree.

Thestepsforthederivationofthe**Mean**valuewereasfollows:
SA=StronglyAgree=5
A=Agree=4
U=Unknown=3
SD=StronglyDisagree=2
D=Disagree=1
Meanvalue=5+4+3+2+1
5=3.0
DecisionRule:
MEAN
TheMeanvalueof**2.5**wasusedasstandard.Anymeanthatwas2.5andabovewas**Yes**whileanymeanthatwasbelow2.5was**No**.

Result:-

Table1:-Aretherelaboratoriesinyourinstitution?

S/N	Groups	Responses	Scale
1.	A	SA	5
2.	B	A	4
3.	C	SD	2
4.	D	D	1
Mean	**3.0**		

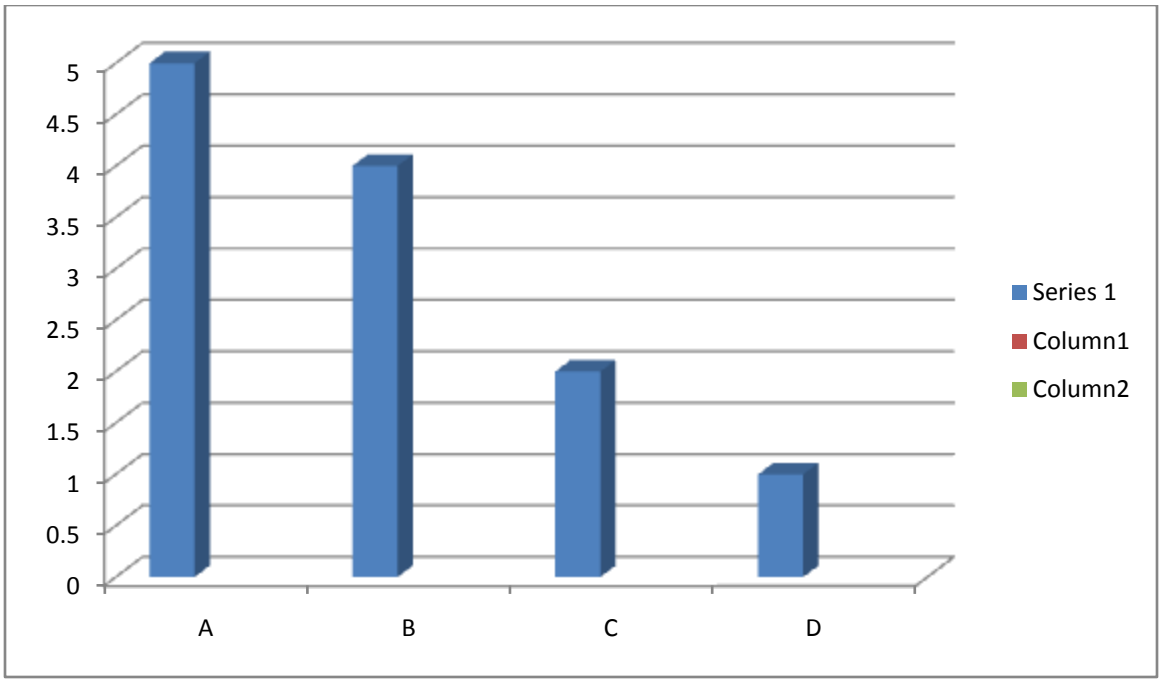


Table2:- Arethelaboratorieswellequipped?

S/N	Groups	Responses	Scale
1.	A	SA	5
2.	B	A	4
3.	C	U	3
4.	D	SD	2
5.	E	D	1
Mean	**3.0**		

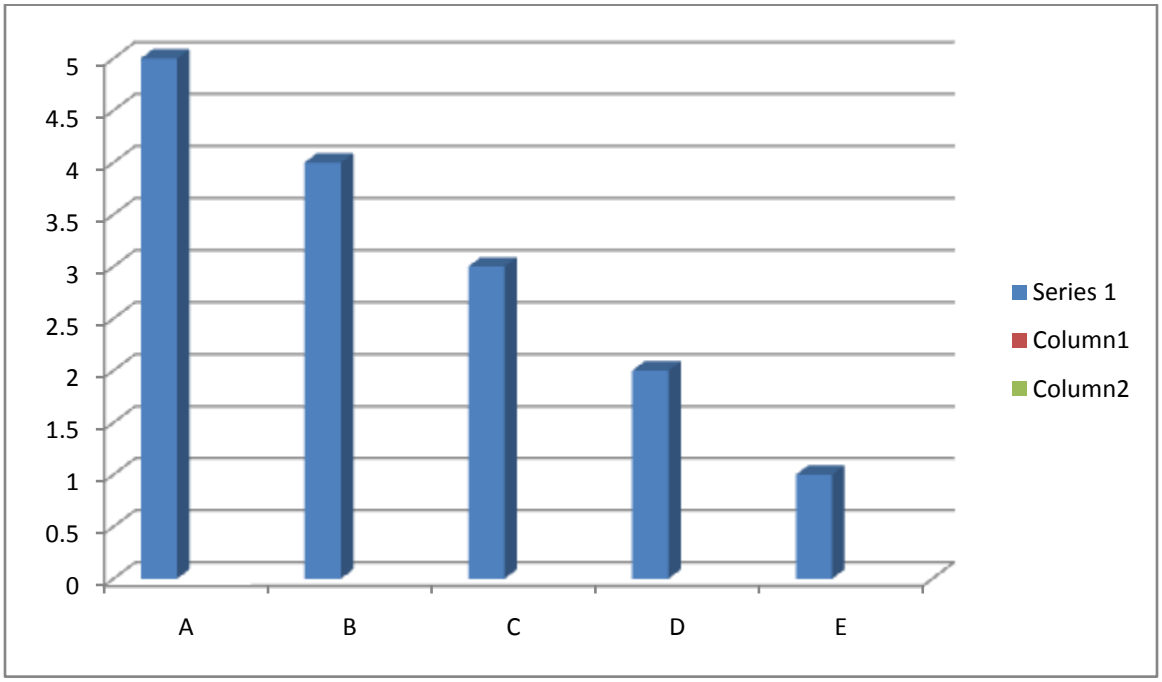


Table3:- Aretherefunctioningbasicamenitieslikeelectricityandgoodwatersupplyinyourschool?

S/N	Groups	Responses	Scale
1.	A	A	4
2.	B	U	3
3.	C	SD	2
4.	D	D	1
Mean	**2.5**		

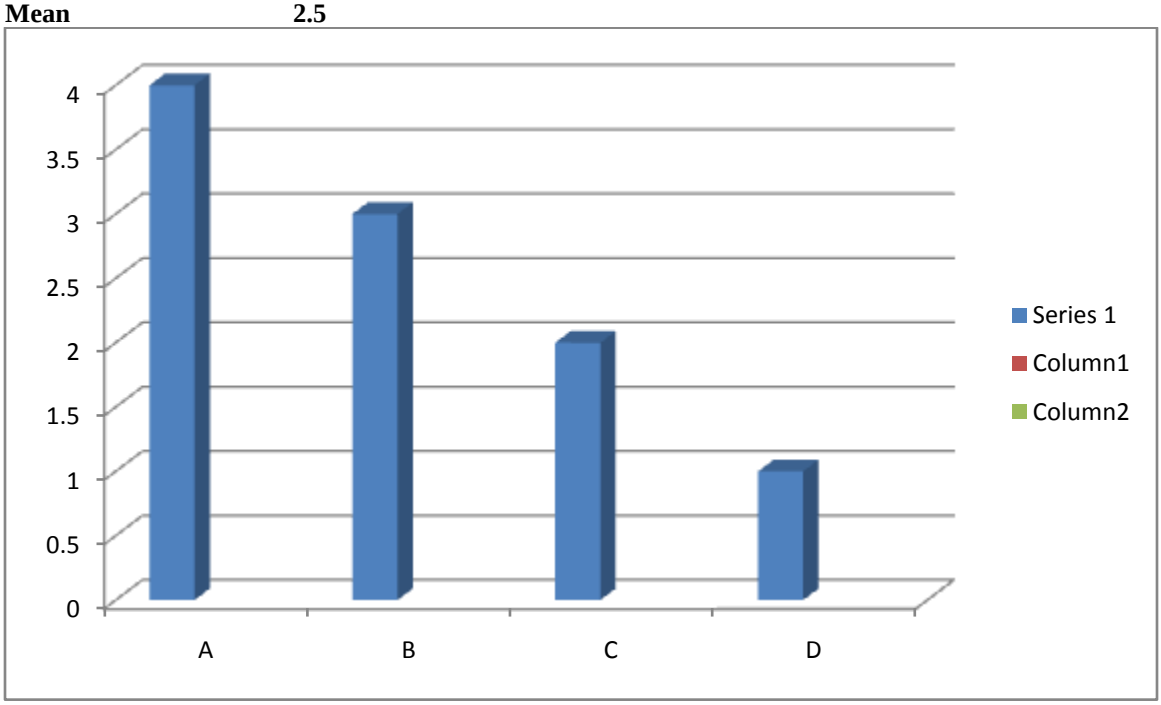


Table4:-Arestudentsgivenaccesstoheuristicallyanddemonstrativelyusethelaboratoriesinyourschool?

S/N	Groups	Responses	Scale
1.	A	SD	2
2.	B	D	1
Mean	**`1.5**		

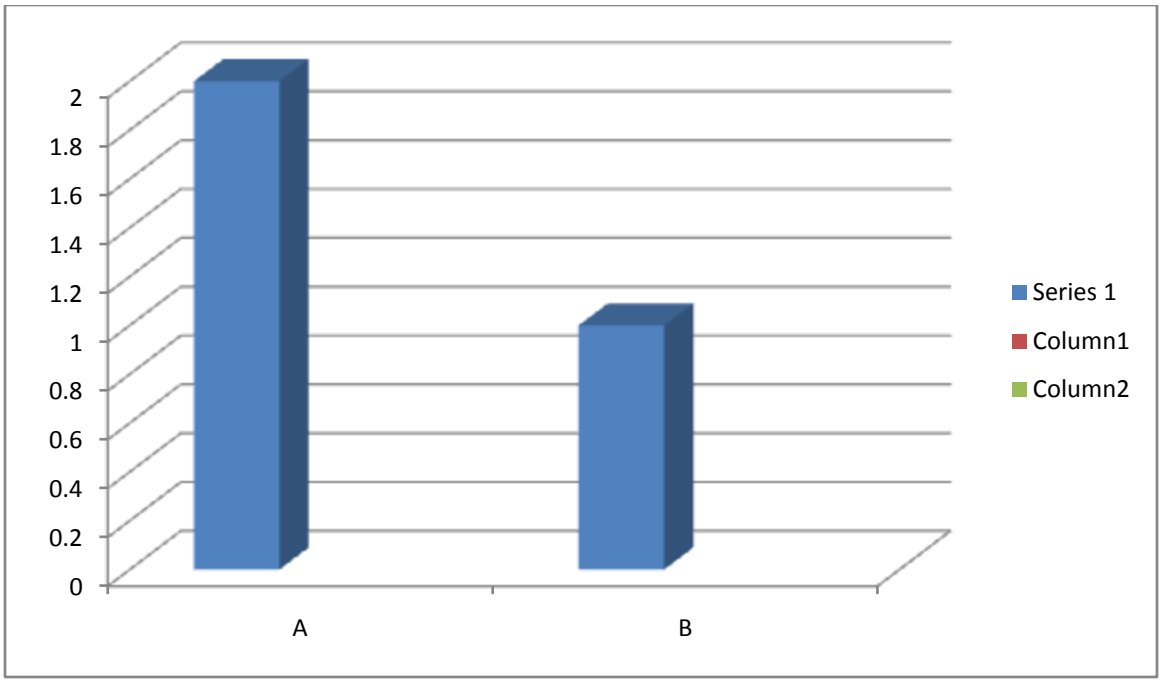


Table5:- Dolecturersreferstudentstocarryoutlaboratorypracticeafterclassroomwork?

S/N	Groups	Responses	Scale
1.	A	U	3
2.	B	D	1
Mean	**2.0**		

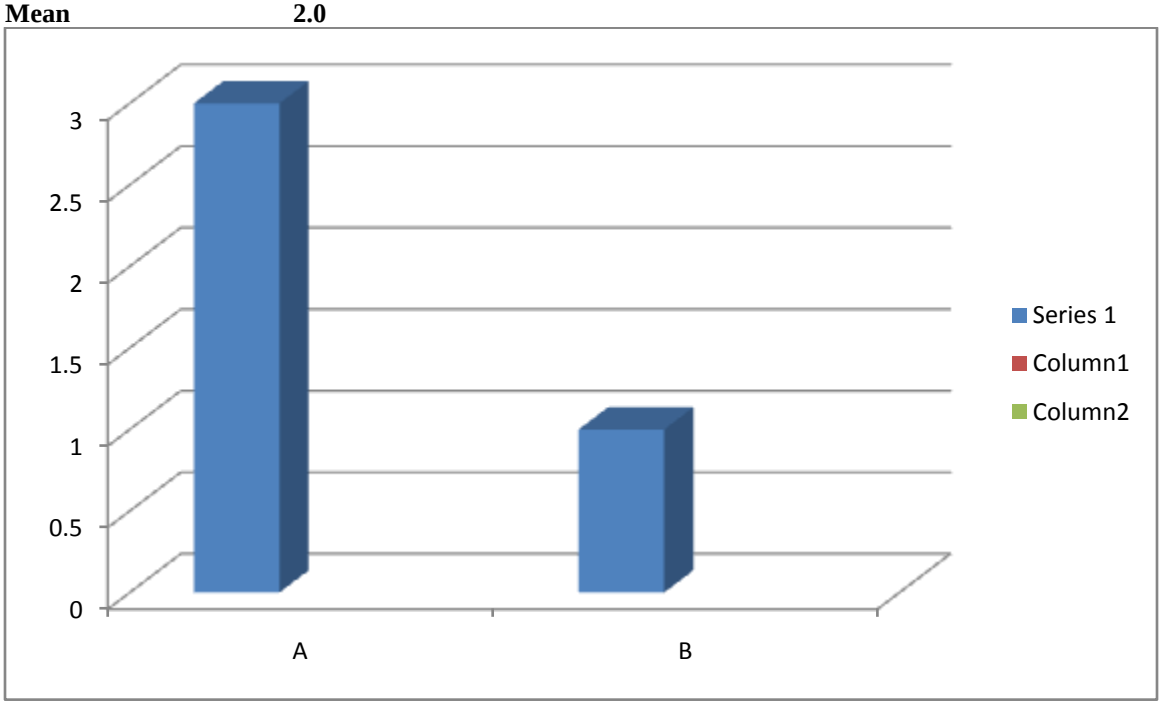
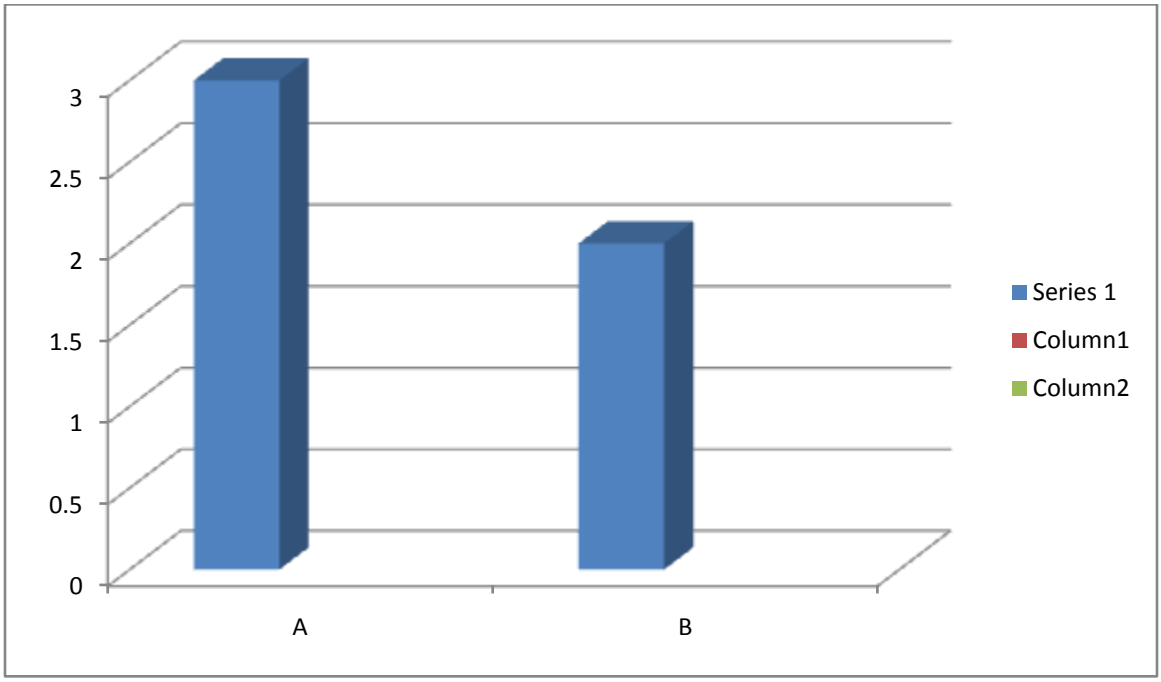


Table6:- Dothelecturersmonitortheirstudentsduringthelaboratorypractices?

S/N	Groups	Responses	Scale
1.	A	U	3

2. B SD 2
Mean 2.5



ResearchQuestion7:Dostudentsperformwellinmicrobiology?
Here,thelecturers'logandprogressbooksofthelecturerswereconsultedwhichrevealedpoorperformance.

Discussion:-

Thestudyontheinfluenceofequippedlaboratorypracticeontherateofassimilationofmicrobiologyamongstudentsinuniversitiesfoundin Anambrastaterevealedthefollowingresults:thattherewerelaboratoriesintheinstitutions;thelaboratorieswere wellequipped;therewerefunctioningbasicamenitieslikeelectricityandgoodwatersupplyintheschools;thestudentswereno tgivenaccesstoheuristicallyanddemonstrativelyusethelaboratoriesintheschools;thelecturersdonotreferstudentstocarryo utlaboratorypracticeafterclassroomwork;thelecturersdomonitortheirstudentsduringthelaboratorypracticesandstudents performpoorlyinmicrobiology.

Conclusion:-

So,theresultsofthestudyshowedthateventhoughthereareequippedlaboratoriesbuttheyarenotutilized.Afurtherconsultatio ntothestudents'resultsheetrevealedpoorperformance.Thispoorperformancemightnotbedisconnectedfromthefactthathe availabilityandusageofequippedlaboratoriesinfluencestherateofunderstandingofmicrobiology.Thisstudyalsocallsforfu rtherresearchesforvalidation.

References:-

1. Arora,D.R.andArora,B.B.(2012).“TextbookofMicrobiology”,CBSPublishersandDistributorsPvt.LtdNewDelhiIn dia,Pages319-321and43-47.
2. Ezendianefo,J.N.(2022).Antibioticsusceptibilityprofilingofbacteriaisolatedfrom EzeStreaminNkpologwuAguataf oundinAnambrastateofNigeria,WestAfrica.JournalofAdvanceResearchinSocialandHumanities.8(8),1-5.
3. Fritzsche,A(2018)."CorporateForesightinOpenLaboratories-ATranslationalApproach".TechnologyAnalysis&StrategicManagement.30(6):646–657.
4. Matson,M.L.,Jeffrey,P.F.,&Shirley,L.(2007).CreatingCustomized,Relevant,andEngagingLaboratorySafetyVide os".JournalofChemicalEducation.84(10):1727.
5. Onyali,L.C.,Ezeugbor,C.O.&Okoye,F.O.(2016).Introducingcreativityandinnovationintoclassroommanagements kills:Apanaceaforstudentshighperformanceinsecondaryschools inAnambrastate,Nigeria.InternationalJournalfor ResearchinBusiness,ManagementandAccounting.Vol;2;8;3.

6. Umeaku,C.N.,Ezendianefo,J.N.,Chris-Umeaku,C.I.&Dimejesi,S.A.(2022).OccurrenceofAntibioticResistantBacteriaandAntibioticResistantGenesinRiversfoundinAnambrastate,Nigeria.GSCBiologicalandPharmaceuticalSciences.304-316.
7. Vinck,D.(2010).Thesociologyofscientificwork.TheLypiatts:EdwardElgarPublishingLimited.Pp.83,97–100.