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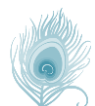
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DISCOVERY
SCIENTIFIC SOCIETY

Engineering work-integrated learning in transmission system auto-diagnostic skills for graduation employability and economic growth

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ABSTRACT

To achieve quality education in engineering, good jobs opportunities and reliable economic growth for automobile students upon graduation, the use of modern auto-diagnostic tools should come into play. The engineering theory and practice in auto-diagnostic towards public-great working, displaying the student's ability capacities in the utilization of On-Board diagnostics version 2 (OBD II) for vehicle transmission system diagnosis and repair were investigated. The sample comprised 299 university fourth-year students of automobile engineering and then having a population of 1,521. The outcome uncovered a significant finding that one university had the most noteworthy mean score worth of 6.30 in the transmission system/framework explore, involving the OBD II convention as against 6.00 in the pre-test and with by and large raters all out mean scores of 76.31 and 71.51 in the pre-test and post-test separately. Such meant that the university has utilitarian exceptional present-day vehicle studio utilized for pragmatic works than others. Thusly, the speculations showed that there is a huge contrast in the auto-symptomatic employability abilities moved by students applying OBD II analytic convention to those utilizing customary techniques. In view of the discoveries, students ought to be commanded to do their modern connection/work-integrated learning (WIL) in automobile workshops, during the Students Industrial Work Experience Scheme (SIWES), where they are to be all around regulated by their relegated teacher. The study suggested that, the OBD II analytic convention ought to be used in the preparation of auto/mechanical students for vehicle diagnosis and support for powerful execution and ability, to guarantee employability in the advanced universe of work.

Keywords: Transmission system, On-Board diagnostics version 2, Auto-diagnostic skills, Employability, Work-integrated learning.

1. INTRODUCTION

Statement of the problem and background to the research

The requirement for this study is to feature the troubling state of vehicle designing under studies' advanced auto-symptomatic ability obtaining needs for business age, abundance creation and destitution destruction in Nigeria as against the standard option common-sense showing approach for functional shortcoming determination and fix work. Auto-diagnostic instruments are utilized to analyze car systems tasks which are efficiently coded and interpret the vehicular investigating and faults correspondence by means of a connection point with the apparatus, vehicle and web for part required cures like evacuation, fixes, revamp, substitution, administration or support to be achieved. Those parts required cures/occupations (evacuation, fixes, renovate, substitution, administration or support) are a portion of the capability's car technicians need to achieve in the event that auto demonstrative device utilization expertise is procured. Utilizing an installed indicative (OBD-II) examine device will give you an additional method for finding and fix issues while feeling like an expert specialist simultaneously (Fracchia, 2019). So, if you need to capitalize on the instrument, you want to know when to utilize it for better employability.

Suleman, (2018) examining employability plan, expressed how High Education Institutions are forced into teaching understudies in the abilities that businesses request. In his conversation of the employability plan, Suleman, (2018) noticed that advanced education establishments are feeling the squeeze to furnish understudies with the abilities that organizations need. As per Garsten and Jacobsson, (2004), employability was depicted as having the option to conform to changes in the realm of work constantly. Universities understudies will at the appointed time be graduates, then the subject of their employability will surface. Björck, (2021) expressed the need to encourage employable alumni, advanced education needs to turn out to be more practice-based to help the strategy frame asking advanced education establishments overall to plan understudies for the gig market. In the mid1990s, businesses and state-run administrations universally encourage individuals to stick to the neoliberal understanding of employability, where contemporary working life is continually changing and can't ensure secure work, so people should attempt to adapt to the vulnerability by becoming and remaining employable (Letts, 2019).

Considering the employability plan and the neoliberal translation of employability, Björck, (2021), investigated what happens when this thought under the name of graduate employability enters the talk that is utilized to examine different standard models of the type of advanced education called Work-integrated Learning (WIL). Situation WIL is a more pervasive WIL plan (Zegwaard and Rowe, 2019) having standard arrangement in numerous degree programs includes dividing understudies' schooling into nearby preparation and position based preparing off-grounds. Björck, (2021), allude to this arrangement as the standard WIL plan and there is additionally non-position WIL, by which understudies take part in supposed genuine world-like exercises nearby to secure both specialized and delicate abilities (Jackson, 2017). In putting work insight as something that businesses look for, this citation suggests as opposed to expressly expresses that this experience cultivates employable alumni (Björck, 2021).

Previous research

Basic on the theory that useful experience and craftsmanship, as opposed to formal tutoring and information in principle, prepares students for proficient work (Björck, 2021). This supposition that is opposing in light of the fact that it addresses a depreciation of formal tutoring and hypothesis and regarding the said suspicion, craftsmanship implies the skill that you can gain from rehearsing an occupation and that expert work is established upon (Björck, 2021). The presumption expressed above can likewise be communicated at the end of the day, specifically that an employable alumnus is an alumnus who has the reasonable experience and subsequently the craftsmanship, details to be prepared for proficient work. The reasonable experience, craftsmanship and details in the cutting-edge universe of work need satisfactory skill in the utilization and use of PC and related gadgets. Quinlan and Renninger, (2021) believed that teachers and strategy creators need to reexamine employability mediations and think past showing understudies' abilities or properties that lead to work in that colleges focus on the employability of graduates, particularly in the STEM regions.

There was an official drive in 2005 to advance expertise obtaining, revive and work on the investigation of science, technology, engineering and mathematics (STEM) subjects in schools at all levels in Nigeria and the national universities commission (NUC), the national board for technical education (NBTE), left on series of exercises pointed toward resolving the noticed issues in STEM, with TET Fund mediation including instructive preparation research centers and studio/hardware provided by SKILL "G" to 73 Nigerian state funded universities (SKILL G Nig. Ltd, 2015).

In car designing review, the common-sense studio and research center trials is under 10% of the credit hours load for a five-year course of study, not disapproving of the powerful idea of innovation in the car business. The appearance of present-day auto

vehicles (1996 models to date) that are On-Board Diagnostic variant 2 (OBD II) consistent and more complicated mixture vehicles are been fabricated. As seen by Blackie et al., (2016) that there is a tireless mumble from ventures that graduates are not completely ready to work in the designing field. Most designing college graduates are frequently respected particularly via auto industry has not been essentially prepared to deal with present-day auto-demonstrative apparatuses for issue finding and upkeep. There is the issue of vehicle shortcoming analysis and fix capacity among car designing understudies and the inquiry could be how much might understudy at any point involve the OBD II for determination and fix of the vehicle assuming they were thought utilizing the OBD II and were provided gear utilized for appropriate ability securing that will prompt been employable and mechanical progression? Once more, do coaches in the colleges have the specialized ability to involve the gear for understudies auto-demonstrative expertise securing? The review is expected to connect existing holes of understudies not gaining essential abilities on the utilization of auto-demonstrative devices for vehicle shortcoming conclusion and fixes for expansion in their employability sculptures.

To capitalize on the OBD and when to utilize it well, Fracchia, (2019) expressed as follows: 1. When the Check Engine light is on: Remember the light that is apparently consistently on, in any event, when the motor isn't exiting? That basic minimal light addresses various issues that can happen some place in your motor, transmission or exhaust frameworks. To figure out this light rather than simply disregarding it, the indicative instrument will take care of business. 2. Record vehicle execution/measurements: Some better-quality vehicle analytic instruments can accomplish something beyond read motor codes. Further developed apparatuses can take live information estimations of the vehicle's frameworks to assist you with fining tune the arrangement. Understudies' ability will be guaranteed in the learning of autotronic innovation utilizing the auto analytic apparatus to abilities through the down to earth hands-to-device process. The auto analytic devices (INNOVA 3140d; the second era locally available symptomatic OBD 2; Bio-directional auto examine apparatus) use and application in learning of autotronic innovation to upgrade understudies skill by following demonstrated process: 1. Instructions to find passageway; 2. Interface the instrument utilizing fitting connectors; 3. Turn "ON" vehicle start; 4. Turn "ON" the instrument; 5. Run the instrument analytic program; 6. Explore through vehicle framework to get to analytic code from the vehicle electronic control module; 7. Record discoveries; 8. Check what the framework code implied and check whether they attempt issue showed by the difficulty code should be amended before you clean the code; 9. Do the framework fixes; 10. Select the erase code choice to clear blame code; 11. Rehash things 3-6 to reverify and reactivate the issue code. 12. Turn "OFF" the apparatus and disengage from the passage.

2. RESEARCH METHODS

Analytical approach and research design

The study location was universities in Southeast Nigeria and participants consisting of two hundred and ninety-nine (299) fourth year students of automobile engineering having a population of one thousand five hundred and twenty-one (1,521) automobile engineering students of the universities. Among the two hundred and ninety-nine fourth year students (participants/understudies), having theoretical approach as pretest and practice approach as post-test. The research design was a quasi-experimental, where intact classes are used without random selection and assignment of subjects (Sambo, 2008). Two research questions and hypothesis guided the study. The information gathered for the study was investigated utilizing mean and standard deviation to respond to the exploration questions presented while Analysis of Covariance (ANCOVA) insights with the guide of Computer Statistical Package for Social Sciences (SPSS) will be utilized to test the speculations planned at the 0.05 degree of importance.

Measure

The instrument we used for data collection was Fault and Maintenance Skills Test (FMST), which was validated and an intra-class relationship coefficient for the 3 raters was 0.770 with a certainty span (0.327, 0.938); showing great dependability and consistency of the exploration instrument. The intra-class relationship coefficient accepts values somewhere in the range of 0 and 1 where values underneath 0.5 demonstrate unfortunate unwavering quality, somewhere in the range of 0.5 and 0.75 moderate dependability, somewhere in the range of 0.75 and 0.9 great dependability and any worth above 0.9 shows superb dependability (Bobak et al., 2018). The FMST contains four segments, with the main area (1) having 14 things as presentation/guidelines, the subsequent segment (2) has 4 things on private information, the third segment (3) is a numerous decision thing with four choices (A-D) and the fourth segment (4) is the useful test. Just a single choice is the right solution for everything in segment (3) and conveys suitable imprints giving a sum of 27 imprints. Segment (4) has six viable autotronic/car tests, on shortcoming and upkeep of the three vehicle frameworks (transmission, electrical and brake) and understudies are to pick one thing out of the two useful test things in every vehicle framework. The FMST was regulated in the understudies as a pre-test before treatment and a post-test after treatment. The understudies were managed post-test following a month of the pre-test utilizing the instrument. The FMST was

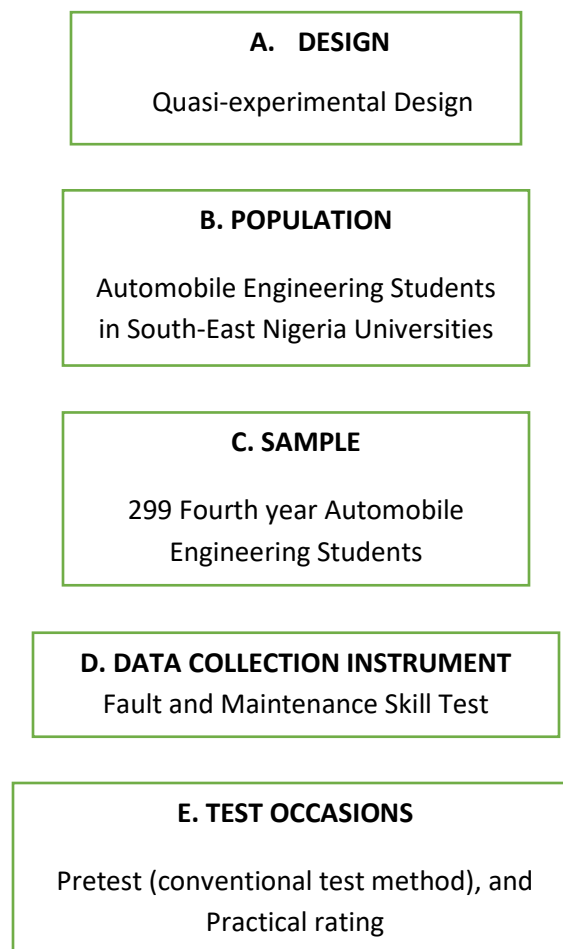
planned by the scientist, who controlled the tests with two other raters as functional analysts, following the expressed score design for evaluating understudies.

Participants

The participants in this study were given reasonable manuals got from the department gathered through the Technologist responsible for the vehicle/autotronic research center for affirmation of the standard of the substance in accordance with the national universities commission recommended pragmatic trial, which was utilized for the benchmark group. The analyst arranged the seat mark manual that was utilized to show the trial bunch. Those Lecturers and Technologists, who are to deal with the trial bunch as raters were prepared with the most proficient method to involve the auto-analytic device as PC helped informative bundle.

Data analysis

The analyst exhibited to students how to involve the auto-symptomatic apparatuses for vehicle shortcoming correspondence. The preparation covered time of about fourteen days while the whole review takes a time of about fourteen days. The pre-test was directed to the two gatherings utilizing FMST before treatment to decide the identicalness of auto-analytic expertise appointed to trial and control gatherings. The trial bunch was shown utilizing the auto-analytic apparatus (Onboard indicative variant 2) as PC helped the educational bundle while the benchmark group was shown utilizing the regular strategy. Figure 1 below is a block-line schematic representation of the research methodology, showing the design of the research, participants, measures, test occasions, treatments and the method of data analysis.



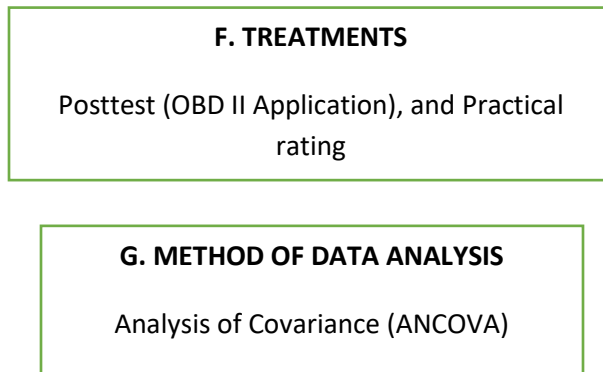


Figure 1 Block-line schematic representation of the research methodology

3. RESULTS

The scores were recorded, registered and utilized for information investigation in line with research questions and hypotheses for the research.

Table 1 Descriptive Statistics of Dependent Variable: Transmission system

Type of test	University	Mean	Std. Deviation	N
Pre-Test	University A	4.54	1.888	24
	University B	5.06	1.318	32
	University C	5.31	1.911	29
	University D	5.13	1.469	47
	University E	4.36	1.777	25
	University F	3.98	1.488	52
	University G	6.00	1.232	30
	University H	4.00	1.369	17
	University I	4.05	1.825	43
	Total	4.70	1.710	299
Post-Test	University A	4.08	1.442	24
	University B	5.23	1.357	30
	University C	3.36	1.446	28
	University D	4.49	1.572	47
	University E	3.92	1.498	25
	University F	4.06	1.673	52
	University G	6.30	1.264	30
	University H	2.82	1.551	17
	University I	3.65	1.378	43
	Total	4.27	1.715	296
Total	University A	4.31	1.678	48
	University B	5.15	1.329	62
	University C	4.35	1.950	57
	University D	4.81	1.547	94
	University E	4.14	1.641	50
	University F	4.02	1.576	104
	University G	6.15	1.246	60
	University H	3.41	1.559	34
	University I	3.85	1.620	86
	Total	4.48	1.725	595

From table 1 above, for the most part, the test uncovered that in the pretest (traditional technique), universities A, C, D, E, H and I performed better, shockingly, universities B, G and F had higher mean scores in the posttest (utilizing the OBD II convention) during the shortcoming analysis and support of the vehicle transmission system. Then, university F had the least mean score of 3.98 and university G had the most extreme mean score of 6.00 in the pre-test. This shows that the students of university F didn't really perform better utilizing the OBD II convention during the Post-test of the vehicle slowing mechanism with a mean score of 4.06, while university G had a mean score of 6.30, indicating that students of the university must have been involved in work-integrated learning during their work experience program in industries.

Table 2 Descriptive Statistics for Dependent Variable: Rater Score for OBD diagnostic protocol

Rater	Type of Test	University	Mean	Std. Deviation	N
Rater 1	Pre-test	University A	69.2500	12.51173	24
		University B	71.5938	8.79831	32
		University C	70.2759	11.94600	29
		University D	71.2128	8.08632	47
		University E	65.4800	8.83704	25
		University F	71.2500	6.53460	52
		University G	75.6667	6.06478	30
		University H	68.7647	9.55595	17
		University I	71.4419	7.89907	43
		Total	70.8729	8.93924	299
	Post-test	University A	59.7083	11.23457	24
		University B	65.9000	10.16536	30
		University C	53.1429	10.10579	28
		University D	64.0426	10.06275	47
		University E	64.8000	12.40632	25
		University F	68.5769	7.70878	52
		University G	68.7333	9.86786	30
		University H	65.0000	7.93725	17
		University I	64.6744	11.60197	43
		Total	64.3311	10.91687	296
	Total	University A	64.4792	12.71285	48
		University B	68.8387	9.83335	62
		University C	61.8596	13.97375	57
		University D	67.6277	9.76827	94
		University E	65.1400	10.66562	50
		University F	69.9135	7.23679	104
		University G	72.2000	8.84097	60
		University H	66.8824	8.85836	34
		University I	68.0581	10.43676	86
		Total	67.6185	10.48780	595
Rater 2	Pre-test	University A	71.5833	11.91607	24
		University B	72.1250	7.28122	32
		University C	71.6897	10.32716	29
		University D	71.3617	7.39690	47
		University E	65.0000	8.82232	25
		University F	71.3462	6.33659	52
		University G	76.5333	5.45662	30
		University H	69.2353	9.33093	17
		University I	71.6744	7.29880	43

	Post-test	Total	71.4013	8.34247	299
		University A	61.1250	11.22618	24
		University B	66.8000	9.24532	30
		University C	53.7143	10.61745	28
		University D	64.2128	10.74393	47
		University E	62.7200	12.57153	25
		University F	67.6923	8.00622	52
		University G	74.9000	7.72970	30
		University H	64.7647	7.62831	17
		University I	65.1163	11.67049	43
		Total	64.9628	11.15052	296
	Total	University A	66.3542	12.61288	48
		University B	69.5484	8.64733	62
		University C	62.8596	13.77943	57
		University D	67.7872	9.85254	94
		University E	63.8600	10.81007	50
		University F	69.5192	7.41552	104
		University G	75.7167	6.68439	60
		University H	67.0000	8.69343	34
		University I	68.3953	10.22256	86
		Total	68.1983	10.34624	595

Rater 3	Pre test	University A	67.5417	12.63872	24
		University B	71.5625	7.98764	32
		University C	73.1034	10.53343	29
		University D	71.2128	7.32161	47
		University E	64.6400	8.75538	25
		University F	71.5000	6.59917	52
		University G	76.7333	5.68078	30
		University H	69.7059	9.09509	17
		University I	72.2558	6.95254	43
		Total	71.2575	8.60957	299
	Post-test	University A	61.2083	10.26170	24
		University B	66.5333	9.13022	30
		University C	54.4286	9.58173	28
		University D	64.2979	10.54373	47
		University E	63.9200	12.33532	25
		University F	67.7500	7.93818	52
		University G	70.9000	8.91086	30
		University H	64.9412	7.65237	17
		University I	64.8837	11.59476	43
		Total	64.7061	10.60755	296
	Total	University A	64.3750	11.82969	48
University B		69.1290	8.85860	62	
University C		63.9298	13.72805	57	
University D		67.7553	9.67392	94	
University E		64.2800	10.59272	50	
University F		69.6250	7.50429	104	
University G		73.8167	7.97133	60	

Total		University H	67.3235	8.62245	34
		University I	68.5698	10.20097	86
		Total	67.9983	10.18904	595
	Pre-test	University A	69.4583	12.29787	72
		University B	71.7604	7.96538	96
		University C	71.6897	10.89304	87
		University D	71.2624	7.55517	141
		University E	65.0400	8.69209	75
		University F	71.3654	6.44989	156
		University G	76.3111	5.69377	90
		University H	69.2353	9.14896	51
		University I	71.7907	7.34387	129
		Total	71.1773	8.62712	897
	Post-test	University A	60.6806	10.78448	72
		University B	66.4111	9.42492	90
		University C	53.7619	10.00195	84
		University D	64.1844	10.37965	141
		University E	63.8133	12.29886	75
		University F	68.0064	7.84486	156
		University G	71.5111	9.14704	90
		University H	64.9020	7.58487	51
		University I	64.8915	11.53273	129
		Total	64.6667	10.88473	888
	Total	University A	65.0694	12.33827	144
		University B	69.1720	9.08295	186
		University C	62.8830	13.77202	171
		University D	67.7234	9.73061	282
		University E	64.4267	10.63131	150
		University F	69.6859	7.36447	312
		University G	73.9111	7.96942	180
		University H	67.0686	8.64052	102
		University I	68.3411	10.24942	258
		Total	67.9384	10.33875	1785

From the Table 2 over, the test uncovered a general university perform agreeing the raters absolute mean scores, for rater one having university C with least score 61.86 and university G with most extreme score 72.20. Rater two had university C with a base score of 62.86 and university G with most extreme score of 75.72. Rater three had university C with least score of 63.93 and university G with most extreme score of 73.82. Further examination as per raters scores showed that, in the pretest, university E had least score of 65.04, while university G had most extreme score of 76.31, then, at that point, the posttest had university C with least score of 53.76 and university G had most extreme score of 71.51. The outcome showed that university G as per the raters, was the best appraised in the pretest and posttest rating of the OBD II convention auto-analytic trial of understudies on the vehicle transmission, electrical and stopping mechanisms.

The universities had a mean square of 38.57 and F of 16.22 with test communication mean square of 7.39 and F of 3.11. Consequently, these distinctions were genuinely critical, so the invalid speculation, which expresses that there is no tremendous contrast in the employability ability of understudies utilizing on-board demonstrative variant 2 (OBD II) convention bundle for transmission framework shortcoming analysis and support contrasted with those showed utilizing customary techniques, is dismissed.

Table 3 Tests of Between-Subjects Effects for Dependent Variable: Transmission system

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	394.064 ^a	17	23.180	9.745	.000
Intercept	10583.294	1	10583.294	4449.224	.000
Test	33.405	1	33.405	14.043	.000
University	308.592	8	38.574	16.217	.000
Test * University	59.105	8	7.388	3.106	.002
Error	1372.500	577	2.379		
Total	13721.000	595			
Corrected Total	1766.565	594			

^aR Squared = .223 (Adjusted R Squared = .200)

Table 4 Tests of Between-Subjects Effects for Dependent Variable: Rater Score for OBD diagnostic protocol

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	43204.081 ^a	53	815.171	9.567	.000
Intercept	7273533.424	1	7273533.424	85366.672	.000
Rater	122.299	2	61.150	.718	.488
Test	17559.630	1	17559.630	206.091	.000
University	15429.536	8	1928.692	22.636	.000
Rater * Test	.914	2	.457	.005	.995
Rater * University	592.058	16	37.004	.434	.974
Test * University	7925.204	8	990.650	11.627	.000
Rater * Test * University	418.953	16	26.185	.307	.996
Error	147487.140	1731	85.203		
Total	8429578.000	1785			
Corrected Total	190691.221	1784			

^aR Squared = .227 (Adjusted R Squared = .203)

The universities had a mean square of 1928.69 and F of 22.64 with test communication mean square of 990.65 and F of 11.627. Once more, there was a huge positive increment between the raters mean square of 61.15 and F of 0.72 contrasted and the rater, test and college communication mean square of 26.19 and F of 0.31, thus, these distinctions were genuinely critical, as the rater has 0.49, test and universities have 0.00 and their collaborations with rater have 1.00, so the invalid speculation, which expresses that there is no massive contrast in the auto-demonstrative employability reasonable abilities moved by understudies applying OBD II symptomatic convention and those utilizing ordinary strategies, is dismissed.

4. DISCUSSION

The consequence of the information in research question one, most strikingly uncovered that in the pretest, University G had the most extreme mean score of 6.00 and utilizing the OBD II convention during the posttest had a mean score of 6.30, showing that the students performed better, however demonstrative of some students could have had work-integrated learning (WIL) on the utilization OBD II before the test. As per Zegwaard and Rowe, (2019) explanation the position of WIL is a more common WIL configuration having a standard arrangement in numerous degree programs includes dividing students' schooling into nearby preparation and situation-based preparing off-grounds.

Björck, (2021) alludes to this arrangement as the typical WIL plan and there is additionally non-position WIL, by which understudies take part in supposed genuine world-like exercises nearby to obtain both specialized and delicate abilities (Jackson, 2017). Once more, the discoveries are in accordance with the discoveries of Blackie et al., (2016), expressing that there is a determined mumble among the businesses that graduates are not completely ready to work in STEM fields, particularly in auto engineering enterprises. Likewise, Maboe and De-Villiers, (2011) who explored the impact of PC helped guidance in nursing schooling to find out the apparent advantages of the understudies' openness and the issue that they had experienced in the utilization of CAI.

The review showed that Learners', who had been presented with Computer-helped guidance and Computer-based learning accomplished exceptionally high than those showed utilized ordinary strategies.

5. CONCLUSION

The consequence of the information examined in the research question uncovered that for the most part in the pre-test for all the raters, university G had the greatest score of 76.31 and university G had the most extreme mean score of 71.51. Thusly, there are beneficial outcomes of understudies' employability abilities involving OBD II convention as CAI bundle for stopping mechanism shortcoming analysis and upkeep contrasted with those shown utilizing ordinary techniques. This is in accordance with the assessment that aggregate examinations look at the effect of PC-helped guidance on students learning. The greater part of the assessed influences is positive and measurably huge, yet a couple has genuinely inconsequential or fundamentally adverse outcomes. This heterogeneity in results highlights the significance of program configuration and joining high innovation inputs with educator preparation and guidance.

Ethical issues

Not applicable.

Informed consent

Not applicable.

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Conflict of Interest

The author declares that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Björck V. Taking issue with how the Work-integrated Learning discourse ascribes a dualistic meaning to graduate employability. *High Educ* 2021; 82:307–322. doi: 10.1007/s10734-020-00650-y
2. Blackie M, Roux KL, Mc-Kenna S. Possible Futures for Science and Engineering Education. *Hig Educ J* 2016; 71:755-756.
3. Bobak CA, Barr PJ, O'Malley AJ. Estimation of an inter-rater intra-class correlation coefficient that overcomes common assumption violations in the assessment of health measurement scales. *BMC Med Res Methodol* 2018; 18:93. doi: 10.1186/s12874-018-0550-6
4. Fracchia A. How to Use an Automotive Diagnostic Tool. The best way to interpret the trouble codes of a basic automotive diagnostic tool. The Drive. Brookline Media Inc 2019.
5. Garsten C, Jacobsson K. Learning to be employable: An introduction. In Garsten C, Jacobsson K (Editors). *Learning to be employable: New agendas on work, responsibility and learning in a globalized world* New York: Palgrave Macmillan 2004; 1-22.
6. Jackson D. Developing pre-professional identity in undergraduates through work-integrated learning. *High Educ* 2017; 74(5):833–853.
7. Letts W. University employability agendas, targets and strategies. In Higgs J, Letts W, Crisp G (Editors.), *Education for employability: Learning for future possibilities*. Leiden Boston: Brill 2019; 2:21-36.
8. Maboe KA, De-Villiers L. Computer Assisted Instruction in Nursing Education in South Africa. *Afr J Nurs Midwifery* 2011; 13(1):93-104.
9. Quinlan KM, Renninger KA. Rethinking employability: How students build on interest in a subject to plan a career. *High Educ* 2021; 84(3):1-21. doi: 10.1007/s10734-021-00804-6
10. Sambo AA. *Research Methods in Education*. Stirling-Horden Publishers (Nig) Ltd Gaaf Building, 110-112 Oyo Road, Orogun, Off University of Ibadan Second Gate, Ibadan, Oyo State, Nigeria 2008.
11. SKILL G Nigeria Ltd. *Science, Engineering & Technology Education Training Manual on Autotronics Demonstrator Systems for Higher Educational Institution (HEIs) and Technical Vocational Educational Training (TVET)*. Gregory

University Press, 1012 Amaokwe Achara Uturu, Abia State, Nigeria 2015.

12. Suleman F. The employability skills of higher education graduates: Insights into conceptual frameworks and methodological options. *High Educ* 2018; 76(2):263–278.
13. Zegwaard KE, Rowe AD. Research-informed curriculum and advancing innovative practices in work-integrated learning. *Int J Work-Integr Learn* 2019; 20(4):323–334.