

# Effect of Laboratory/Workshop Curriculum and Teaching Methodology on Entrepreneurial Intentions Of Biomedical Engineering Graduates In Nigeria

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**Abstract— This study examined the effect of laboratory/workshop curriculum and teaching methodology on entrepreneurial intentions of biomedical engineering graduates in Nigeria. The specific objectives of the study include to determine whether laboratory and workshop curriculum content knowledge influence entrepreneurial intentions of biomedical engineering graduates. The study also sought to investigate if laboratory and workshop teaching methodology influence entrepreneurial intentions of biomedical engineering graduates. This study made use of cross-sectional survey research design. The population of this study is 10,279. In determining the sample size, the researcher used Cochran's formula. The sample size for graduate respondents was 625. The sampling technique was random sampling. The researcher used questionnaires as instrument for data collection. The data collected was analyzed, using both descriptive and inferential statistical techniques. The descriptive statistics include frequency counts and percentages. Thereafter, regression analysis was used to test the significance of the hypotheses earlier formulated. The findings suggest that laboratory and workshop curriculum content knowledge significantly influence entrepreneurial intentions of biomedical engineering graduates. Laboratory and workshop teaching methodology does not significantly influence entrepreneurial intentions of biomedical engineering graduates.**

**Keywords—Laboratory Curriculum, Workshop Curriculum, Teaching Methodology, Entrepreneurial Intentions, Biomedical Engineering**

## I. INTRODUCTION

### A. Background Study

Despite no universally accepted definition of the term, entrepreneurship has been seen as a process, action or an activity to convert an idea into a value added product or service. The authors [1] defined the term as the discovery, evaluation and exploitation of an opportunity, while the work [2] defined entrepreneurs as people who have the ability to see and evaluate business opportunities; to gather the necessary resources to take advantage of them; and to initiate appropriate action to ensure success. This behavior would be best predicted by the entrepreneurial intentions [3]. Several empirical studies have found out that a person's intention to become an entrepreneur offers the best predictor of his/her

actual engagement in entrepreneurship in the future [4].

In Nigeria, annually hundreds of thousands of school leavers, university graduates and vocational education and training institutes' graduates enter the job market searching for first jobs. And in most of the cases they fail. For many, entrepreneurship can be an alternative career choice, provided that prior intention exists. Over the past five years, more attention was given to spread of entrepreneurship among students, specifically through vocational training and formal education systems. Nevertheless, these initiatives have not been examined closely for evidence of influence.

### B. Problem Statement

Although the importance of entrepreneurship education had been recognized in the literature, but limited empirical studies have been conducted to analyze the impact of laboratory/workshop curriculum and teaching methodology on entrepreneurial intention of graduates separately from general education [5]. The effect of general education has been explored but only a few studies have looked at entrepreneurial education, particularly at university and tertiary institution level.

According to [6], the effect of laboratory/workshop curriculum and teaching methodology on entrepreneurial intention is limited and still undergoing empirical testing. The study is guided by the following specific objective:

- i. To determine whether laboratory and workshop curriculum content knowledge influence entrepreneurial intentions of biomedical engineering graduates.
- ii. To investigate if laboratory and workshop teaching methodology influence entrepreneurial intentions of biomedical engineering graduates.
- iii. To examine whether laboratory and workshop content delivery influence entrepreneurial intentions of biomedical engineering graduates.

### C. Research Questions

- i. To what extent does laboratory and workshop curriculum content knowledge influence entrepreneurial intentions of biomedical

- engineering graduates?
- ii. How does laboratory and workshop teaching methodology influence entrepreneurial intentions of biomedical engineering graduates?
- iii. To what degree does laboratory and workshop content delivery influence entrepreneurial intentions of biomedical engineering graduates?

#### D. Research Hypotheses

- i. **H0:** Laboratory and workshop curriculum content knowledge does not influence entrepreneurial intentions of biomedical engineering graduates.
- ii. **H0:** Laboratory and workshop teaching methodology does not influence entrepreneurial intentions of biomedical engineering graduates.
- iii. **H0:** Laboratory and workshop content delivery does not influence entrepreneurial intentions of biomedical engineering graduates.

#### E. Significance of the Study

The study is of utmost significance to universities and tertiary institutions, graduates of tertiary institutions, governments, educators and policy makers. The focus of this study brings to the fore the crucial need for entrepreneurial skills in graduate employment generation among youths, putting more consideration on the educational system, strategies and its eventual social developmental effect in the society. The present study will contribute significantly to the operational elements of the educational systems of entrepreneurship education, with regard to the quality of programs, human resources, roles of the universities, aid from the government, government-linked organizations and financial institutions and lastly, the parents and extended family members of the university students. The study could assist policy makers, both the internal and external stakeholders in understanding the unemployment situation of the country and how entrepreneurship education could be motivated with a world-class education system, as desired by the university students to gain entrepreneurial intentions. The practical perspective findings in this study are important to the educational sectors in Nigeria, particularly the government in improving its policies, strategies and systems in terms of entrepreneurship education. This study contributes significantly to the public and private universities, particularly concerning the policies and practices in the selection and management of educational curricula, teaching methodologies and pedagogies of entrepreneurship education.

#### F. Limitations of the Study

However, the researcher will be confronted with some difficulties but the greatest will be in the collection of research materials from respondents in the institutions that will be used as case study. The theoretical framework for the study examines entrepreneurship education variables, components of engineering laboratory and workshop curricula, teaching methodologies and universities roles as the independent variables, and attitude and stake holder support systems as mediating variables to test entrepreneurial intentions, the dependent variable. The limitations to the study are on these variables developed for the study.

## II. LITERATURE REVIEW

### A. Entrepreneurship Engineering Laboratory/Workshop Curricula in Nigerian Universities

In Nigeria, there are an increasing number of academic courses offered in the universities and higher education institutes as core or elective subjects [7]. The Nigerian universities are offering „entrepreneurship“ as a core subject at the first degree level for business courses. Entrepreneurship education studies are also offered to students in the universities and higher education institutes in the forms of co-curriculum activities and programs, such as graduate entrepreneurship trainings, graduate basic entrepreneurship courses and graduate entrepreneur development programmes [8].

The programs that are being offered by Nigerian universities and colleges expose the students to the concept and theories of business and management, which include the following functions.

First, analyzing the business strategies through acquiring concrete knowledge on concepts initially, as tools of analysis for business situations. Second, acquiring and understanding the operations of the various business environments. Third, performing operations by acquiring skills and knowledge through learning, and adapting the analytical, planning and communication. Fourth, operating the skills that can be applied to various complex business situations. The government in Nigeria is continuously promoting entrepreneurial culture in the schools, colleges and universities towards creation of an entrepreneurial and innovative society. Many entrepreneurial programs are introduced at schools, colleges and universities. The support is given to individuals at schools, at a young age itself to have the interest and motivation to start businesses while studying, e.g. the “YouWin Entrepreneurs Program” in Nigeria [9].

### B. Content Delivery/Teaching Methodology – Entrepreneurship Programs

Some Nigerian universities are still using the traditional methods of teaching which include lectures, handouts, materials and video presentations. Some programs try to develop the effectiveness of students as entrepreneurs where they acquire relevant information through learning and practicing. Some of the programs like Bachelor in Entrepreneurship are using the traditional instructor-centered approaches in program facilitation. The programs are delivered through lectures, handout materials and discussion of case studies [10]. It was suggested that effective learning methods should involve students practicing hands-on learning [11]. The literature stated that in order to develop successful teaching methods, it was important to develop a basic understanding of how individuals and groups of students actually learn.

When students take ownership of their learning, they can participate in setting their learning goals and tasks, and only the generic entrepreneurial competencies are practiced and developed [12].

In Nigeria, the entrepreneurial university’s academic processes and activities are embedded in the university

system, encultured in its academic faculties, embodied in its community of practice and engraved in each individual academic.

The entrepreneurial activities in academic entrepreneurship are focused towards exploiting perceived opportunities in the knowledge-based economy. Previous research of academic entrepreneurship tended to be equated with technology transfer, with the creation and development of new organizations, or technology based spin-offs. It is not only interpreted as organizational creation, but also strategic renewal, transformation and innovation within the university systems itself.

In view of this, the process of transferring technology to the industry or the commercialization of the technology or invention, through licensing agreements and university-based start-ups are entrepreneurial activities. Though universities have been successful in teaching and research of academic entrepreneurship, they need to go further to train skilled undergraduates to contribute towards a knowledge-based innovation system and economies.

They have to participate in problem-solving activities in industry and community through contract research, cooperative research with industry, technology licensing and faculty consulting, as well as provide access to specialized instrumentation, equipment and incubation services.

### C. Entrepreneurial Intention

Entrepreneurship intention is concerned with the objective of examining whether a certain group in the society be it youths or university students or any group under study that has an intention to start and operate their own business. Authors [13] stated that starting a business reflects a process in which attitudes and intentions are involved and are based on the development of individual competence, experience and relations to the business context. The work [14-16] added that carrier decisions are clearly planned and the opportunity identification process is intentional and accordingly entrepreneurial intention merits attention in entrepreneurship research. The work [17] stated that entrepreneurial intention plays a big role in determining individual propensity to set up a business enterprise. For this study the definition accepted for use is the one put forward by [18] who defined Entrepreneurship Intention as one's intent to engage in entrepreneurship and one's intention to start one's own business or become self employed, driven by desire for autonomy and expectation of economic gain.

Entrepreneurial intent is substantially more than merely a proxy for entrepreneurship. It is a legitimate and useful construct in its own right that can be used as not just a dependent, but as an independent and a control variable [3]. Intention models belong to the umbrella of social cognitive theory, proposed and developed [4]. The central tenet of "social cognitive theory is that individuals can influence their own actions" [19]. Social cognitive theory proposes a framework for understanding, predicting and changing human behavior [20]. Within this umbrella, intention models contribute to the area of predicting behaviour. Intentions represent "a person's motivation to make an effort to act upon a conscious plan or decisions" [21]. Entrepreneurial intention is hence a person's motivation to make a conscious plan to

perform the behavior of setting up a business. The work [3] defines entrepreneurial intention as "self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future" [3]. Thus, entrepreneurial intention is not merely a yes or no question but can range from very low, zero, to a very high level of intention to set up a business [3]. That links very well to the general rule defined by Icek Ajzen: The stronger the intention is, the more probable the behaviour [8]; hence, entrepreneurial intentions function as a mediator or catalyst for actions.

Research confirms that intentions are strong predictors of actual behaviour in other applied settings [22]. Many authors argue that the decision to become an entrepreneur and set up a business involves careful planning and a thinking process which is highly intentional [22]; [14]; Entrepreneurship is seen as a good example of planned intentional behaviour and therefore applicable for intention models [22]; [15-16], [23]. Specifically for entrepreneurship education programmes, intentions are applicable as "intentions proved to be best predictor of planned behaviour" [15-16], "particularly when that behaviour is rare, hard to observe, or involves unpredictable time lags" [24]. Due to the applicability of the entrepreneurial intention concept, it is often used as a measure of the impact of entrepreneurship programmes. Also, from a researcher point of view, it is not always practicable to wait a number of years to examine how many students eventually founded a real business. Taking entrepreneurial intention as a measure of the impact of entrepreneurship education has the benefit of measuring the immediate impact of a programme. The longer the post-measurement of an entrepreneurship programme is delayed, the greater the measurement bias from contextual and time effects will be. It will be more difficult to isolate the role of a single factor like an entrepreneurship programme in the business creation process [25].

### III. METHODOLOGY

This study made use of descriptive survey research design that allow for the use of questionnaires to elicit data from the respondents. However, the study will be limited biomedical engineering graduates of selected tertiary institutions in Nigeria. Tertiary institutions covered include Federal University of Technology Owerri, University of Ibadan, University Ilorin, Federal College of Dental Technology Enugu, Bells University of Technology Ota, Achievers University Owo, Technical University Ibadan, Taraba State University Jalingo, University of Nigeria Nsukka, University of Lagos, Rivers State College of Health & Technology. The study will collect data from both primary sources. The study also will use questionnaires to collect primary data. The combined study population of graduates of the selected institutions is 10,279. In determining the sample size, the researcher will use Cochran's formula to calculate the sample size when population size is finite. The sample size for graduate respondents is 625. The sampling techniques were purely random in manner, with possible permission from the institution alumina where necessary. The graduates were sampled from different faculties/disciplines in no particular order.

In this study in order to ensure validity and reliability of this work, many things were put into consideration. The questionnaire put across to the respondent was clear and unambiguous. Responses category was as exhaustive and exclusive; as possible and vetted by the research supervisors. In this study, Cronbach's Alpha is used to measure the internal consistency of the items used. From the result below, the Cronbach's Alpha co-efficient indicates that the instrument is 0.775 reliable (i.e. 78% reliable). Hence, the instrument has good (High-Stakes testing) reliability.

Table 1: Reliability Analysis: Cronbach's Alpha Value

Dimensions	No of Items	Cronbach's Alpha
Engineering laboratory and workshop curriculum content knowledge	10	0.756
Teaching methodology	5	0.798
Engineering laboratory and workshop content delivery	5	0.773
Overall score	20	0.775

#### IV. RESULTS AND DISCUSSION

This data obtained for this study were presented using tables specifying relevant information on the amount of questionnaires distributed and retrieved from respondents. Also, the research presents and analyses the demographic data collected from the respondents

Table II: Distribution of the respondents based on disciplines

Disciplines	No of Respondents	Percentage (%)
Engineering	145	36.1
Business/Management	86	21.5
Law	40	10.0
Medicine	50	12.4
Science	80	20.0
Total	401	100

Considering Table II, in terms of disciplines, 36.1% of respondents were engineering students, 21.5% were Business/Management students, 10% were Law students, 12.4% were Medicine students and 20.0% were Science students.

Table III: Career intention of respondents after graduation  
Source: Field Work, 2020.

Career Intentions	No of Respondents	Percentage (%)
Further Studies	60	15.0%
Self Employment	107	26.8%
Employment	119	29.6%
Further Studies & Part Time Business	31	7.6%
Employment & Part Time Business	84	21.0%
Total	401	100

Table III outlines the career intentions of students. The respondents were asked to indicate their career intentions after graduation. Results revealed that majority of the respondents 29.6% (119) indicated employment, 26.8% (107) indicated self employment, 21.0% (84) employment and part time business, 15% (60) further studies, further studies and part time business 7.6% (31).

Quite revealing from this finding is the fact that 29.6% of the survey respondents indicated employment while 26.8% indicated self employment. Apparently 21% preferred joint career intentions. This result can be given several interpretations. In the first place, it appears that most undergraduates still prefer to be in the employment of others which is an indication of high preference for remunerative job. This corroborates the earlier findings of Onuma (2009) that most Nigerian graduates aimed for wage employment in the formal sector.

Table IV. Engineering laboratory and workshop curriculum content knowledge, Field Survey, 2020

S/N	Freq	SA		A		U		D		SD	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	203	102	(50.62)	11	(25.44)	38	(2.74)	47	(9.48)	47	(11.72)
2	167	135	(41.65)	9	(33.67)	45	(2.24)	45	(11.22)	45	(11.22)
3	209	96	(52.12)	31	(23.95)	63	(7.73)	2	(15.71)	2	(0.50)
4	163	127	(40.65)	12	(31.67)	62	(2.99)	37	(15.21)	37	(9.23)
5	96	162	(23.94)	27	(40.40)	72	(6.73)	44	(17.96)	44	(10.97)
6	224	90	(55.86)	9	(22.44)	37	(2.24)	41	(9.23)	41	(10.22)
7	96	201	(23.89)	27	(50.12)	48	(6.73)	29	(11.97)	29	(7.23)
8	198	103	(49.37)	6	(25.68)	63	(1.50)	31	(15.73)	31	(7.73)
9	183	200	(45.64)	2	(49.88)	14	(0.50)	1	(3.49)	1	(0.25)
10	226	109	(56.36)	6	(27.18)	28	(1.50)	32	(6.98)	32	(7.98)

Under engineering laboratory and workshop curriculum content knowledge, respondents were first requested to air

their views on whether engineering laboratory and workshop practical is developed to meet the criteria of the curriculum. 203 respondents representing 50.62% strongly agreed that engineering laboratory and workshop practical is developed to meet the criteria of the curriculum. 47 respondents or 11.72% however strongly disagreed with same submission, 11 respondents, an equivalent of 2.74% were undecided while 102 (25.44) and 38 (9.48) respondents agreed and disagreed respectively. 167 (41.65) respondents strongly agreed that the subject of entrepreneurship interests them very much because of interactive learning. 135 (33.67), 9 (2.24), 45 (11.22) and another 45 (11.22) respondents agreed, were undecided, disagreed and strongly disagree with the submission respectively. Going by the responses, majority of institutions in the study area believe the subject of entrepreneurship interests them very much because of interactive learning.

On the question of whether respondents gain a new experience through engineering laboratory and workshop practical, 209 of the respondents, an equivalent of 52.12% strongly agreed to the statement. This is opposed to 2 respondents or 0.50% who strongly opposed the submission. 31, 96 and 63 other respondents representing 7.73%, 23.95% and 15.91% were undecided, agreed and disagreed respectively. The outcome of the responses indicates that respondents gain a new experience through engineering laboratory and workshop practical. In another development, 163 respondents (40.45%) strongly confirm liking to study entrepreneurship more than other subjects. Record also show that 127 (31.67) respondents agreed, 12 (2.99) respondents were undecided, 62 (15.21) of them disagreed while 37 (9.23) respondents strongly disagreed. Going by simple majority, it can be concluded that respondents willingness to study entrepreneurship is more compared to other subjects..

On whether respondents can develop entrepreneurship skills through knowledge acquired from the engineering laboratory and workshop practical, 96 (23.94), 162 (40.40), 27 (6.73), 72 (17.96) and 44 (10.97) of the respondents strongly agreed, agreed, were undecided, disagreed and strongly disagreed respectively, a confirmation that graduates develop entrepreneurship skills through knowledge acquired from engineering laboratory and workshop practical.

Respondents were asked if they enjoy learning by doing in the through the program and the responses recorded shows that 224 (55.86%), 90 or 22.44%, 9 (2.24%), 37 (9.23%) and 41 (10.22%) of them respectively strongly agreed, agreed, were undecided, disagreed and strongly disagreed respectively that enjoyed learning by practice based on the curriculum content of the program. This by extension indicates that they are competent, an important component in ensuring improved entrepreneurial intentions.

On ensuring that graduates acquire a better understanding

about business as a result of engineering laboratory and workshop practical, 96 respondent or 23.89% strongly agreed that they had a better understanding about business as a result of engineering laboratory and workshop practical. 29 respondents or (7.23%) however strongly disagreed to the submission. 27 respondents or 6.73% were undecided while 201 or 50.12% and 48 or 11.97% of the respondent's greed and disagreed respectively. Majority of the findings are an indication that most institutions studied ensured graduates acquired superior entrepreneurial intentions and a better understanding about entrepreneurship as a result of engineering laboratory and workshop practical.

Respondents were also requested to comment on why they liked to study engineering laboratory and workshop practical, findings revealed that 198 (49.37%), 103 (25.68%), 6 (1.50%), 63 (15.73%) and 31 (7.73%) of the respondents strongly agreed, agreed, were undecided, disagreed and strongly disagreed respectively that they liked engineering laboratory and workshop practical because it teaches real-world situations applications. The respondents also confirm that using sophisticated models in the engineering laboratory and workshop practical can impact on entrepreneurial intentions.

Respondents were requested to assess whether the entrepreneurship program taught dealt with tolerance of ambiguity in the real world and 226 (56.36) of them strongly agreed that entrepreneurship program taught dealt with tolerance of ambiguity in the real world. 109 (27.18%), 6 (1.50%), 28 (6.98%) and 32 (7.98%) other respondents agreed, were undecided, disagreed and strongly disagreed respectively with the submission. The findings have however proved that entrepreneurship program taught dealt with tolerance of ambiguity in the real world. On whether the engineering laboratory and workshop curricula is meant for students who are determined to start their own business, 226 respondent or 56.36% strongly agreed that the engineering laboratory and workshop curricula is meant for students who are determined to start their own businesses. 109 respondents or (27.18%) however strongly disagreed to the submission. 6 respondents or 1.50% were undecided while 28 or 6.98% and 32 or 7.98% of the respondents agreed and disagreed respectively. Majority of the findings are an indication that most institutions studied designed their engineering laboratory and workshop curricula to ensure students start their own business after graduation.

Table V: Respondents views on content delivery and teaching methodology Source: Field Survey, 2020

	SA		A		U		D		SD	
S/N	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	198	(49.38)	113	(28.18)	11	(2.74)	64	(15.96)	15	(3.74)
2	202	(50.37)	127	(31.67)	9	(2.24)	43	(10.72)	20	(4.99)
3	99	(24.69)	211	(52.62)	13	(3.24)	52	(12.97)	26	(6.48)
4	103	(25.69)	186	(46.38)	8	(2.00)	62	(15.46)	42	(10.47)
5	193	(48.13)	128	(31.92)	10	(2.49)	69	(17.21)	2	(0.50)
6	96	(23.94)	189	(47.13)	14	(3.49)	83	(20.69)	19	(4.74)
7	163	(40.65)	141	(35.16)	32	(7.98)	48	(11.97)	17	(4.24)
8	96	(23.94)	189	(47.13)	27	(6.73)	72	(17.96)	17	(4.24)
9	128	(31.92)	161	(40.15)	12	(2.99)	60	(14.96)	30	(7.48)
10	86	(21.45)	215	(53.62)	16	(3.99)	59	(14.71)	25	(6.23)

Respondents were requested to comment on their teaching methodology strategy and most of the respondents 198 (49.38%) strongly agreed that teaching methodology of the engineering laboratory and workshop practical is relevant to the real world. 113 (28.18%) respondents agreed, 11 (2.74%) were undecided, 64 (15.96%) disagreed, while 15 (3.74%) strongly disagreed with the submission. This shows that teaching methodology of the engineering laboratory and workshop practical is effective in solving real world problems. 202 (50.37%) of the respondents strongly agreed that their instructors are experienced in teaching the courses in entrepreneurship, while 20 (10.72%) respondents strongly disagreed to it. Also, 211 (52.62%) respondents agreed that their instructors are experienced in teaching the courses in entrepreneurship while 52 (12.97%) disagreed to it. 99 respondents representing 25.69% strongly agreed that instructors are experienced in teaching the courses in entrepreneurship while 8 respondents representing 2.00% were undecided in the opinion. 128 respondents representing 31.92% agreed that methodologies introduced by instructors for the engineering laboratory and workshop practical are very interesting and has enhanced skills in communication while 20 respondents or 0.5% strongly disagreed to it. 96 respondents or 23.94% strongly agreed that methodologies introduced by instructors for the engineering laboratory and workshop practical are very interesting and has enhanced skills in communication, while 50 or 20.69% disagreed to it. More of the respondents (163 or 40.65%) strongly agreed that methodologies introduced by instructors for the engineering laboratory and workshop practicals are very interesting and has enhanced skills in communication while 32 respondents or 7.98% were undecided to it. In another submission, 96 respondents or 23.94% strongly agreed that their instructors take the students for visits to industries to gain more

knowledge on entrepreneurship subject while 60 respondents or 17.97% disagreed to it. 161 (40.15) respondents confirm that instructors take the students for visits to industries to gain more knowledge on the subject and that they gain access to their competitor's resources and valuable knowledge which enables them to improve their core competences, pursue large-scale innovation projects, create new products and services in less time via joint innovation efforts and increase their product range, while 40.15% of the respondents agreed while 30 respondents or 7.48% strongly disagreed to it. However, 128 respondents or 31.92% agreed that lecturers teach comprehensive business plan models that enhanced entrepreneurial intentions while 2 respondents or 0.50% strongly disagreed to it. 193 respondents (48.13%) strongly agreed, 69 respondents (17.21%) disagreed, while 10 respondents (2.49%) were undecided. Findings of this survey have shown that institutions studied make use of comprehensive business plan models based on robust teaching methodology to enhance entrepreneurial intentions of their graduates. However, 215 respondents or 53.62% agreed that entrepreneurship curriculum content design provided them with an understanding what it means to be an entrepreneur while 25 respondents or 6.3% strongly disagreed to it, 86 respondents (21.45%) strongly agreed, 59 respondents (14.71%) disagreed, while 16 respondents (3.99%) were undecided. Findings of this survey have shown that entrepreneurship curriculum content design provided them with an understanding what it means to be an entrepreneur.

## V. TEST OF STUDY HYPOTHESES

### A. Test of Hypothesis One

**H<sub>01</sub>:** Engineering laboratory and workshop curriculum content knowledge does not influence entrepreneurial intentions of biomedical engineering graduates.

Table VI: Effect of engineering laboratory and workshop curriculum content knowledge (ELWCKK) on entrepreneurial intentions of graduates (EIG). Coefficients.

Model	B	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
			Std. Error	Beta		
1	(Constant)	12.911	4.083		.738	.465
	ELWCKK	.646	.109	.608	.456	.012
	ELWTM	.184	.637	-.174	-1.137	.026
	ELWCD	.897	.230	.767	.894	.038

Dependent Variable: EIG: Source: SPSS 20.0 Output for Field Survey, 2020

$$EIG = 12.911 + 0.608ELWCKK + 0.174ELWTM + 0.767ELWCD$$

S(b<sub>1</sub>): [0.109] [0.116] [0.230]  
P-value: {0.012} {0.031} {0.038}

From the regression equation above we have,

$$b_1 = 0.608$$

Standard deviation of b<sub>1</sub> = 0.109

$$H_0: b_1 = 0$$

$$H_0: b_1 = 0$$

$$\frac{1}{2} b_1 \text{ equals } 0.304$$

significance. This implies that engineering laboratory and workshop curriculum content knowledge (ELWCKK)

significantly influence entrepreneurial intentions of graduates (EIG).

**B. Test of Hypothesis Two**

**H02:** Engineering laboratory and workshop teaching methodology (ELWTM) does not influence entrepreneurial intentions of biomedical engineering graduates.

Using the standard error test,  $S(b_1) > 1/2b_1$  above,  $0.109 < 0.304$ . We therefore have no option than to reject the null hypothesis and instead, accept the alternative one since the estimate b<sub>1</sub> is statistically significant at the 5% level of significance. This implies that engineering laboratory and workshop curriculum content knowledge (ELWCKK) significantly influence entrepreneurial intentions of graduates (EIG).

Using the standard error test,  $S(b_1) > 1/2b_1$  above,  $0.109 < 0.304$ . We therefore have no option than to reject the null hypothesis and instead, accept the alternative one since the estimate b<sub>1</sub> is statistically significant at the 5% level of

Table VII: Effect of engineering laboratory and workshop teaching methodology (ELWTM) on entrepreneurial intentions of graduates Coefficients<sup>a</sup>

Model	B	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
			Std. Error	Beta		
1	(Constant)	12.911	4.083		.738	.465
	ELWCKK	.646	.109	.608	.456	.012
	ELWTM	.184	.637	-.174	-1.137	.026
	ELWCD	.897	.230	.767	.894	.038

a. Dependent Variable: EIG

Source: SPSS 20.0 Output for Field Survey, 2020

Going by our model specification as shown below,

$$EIG = 12.911 + 0.608ELWCKK + 0.174ELWTM + 0.767ELWCD$$

From the regression equation above we have,

$$b_2 = -0.174$$

Standard deviation of b<sub>2</sub> = 0.637

$$H_0: b_2 = 0$$

$$= 0$$

$$\frac{1}{2} b_2 \text{ equals}$$

S(b<sub>2</sub>): [0.109] [0.637] [0.242]  
P-value: {0.012} {0.026} {0.039}

Using the standard error test,  $S(b_2) > 1/2b_2$  above,  $0.637 > -0.087$ . Based on the result of the analysis presented above, we accept the null hypothesis. That is, we accept that the estimate

b2 is statistically significant at the 5% level of significance. This implies that laboratory and workshop teaching methodology (ELWTM) does not significantly influence entrepreneurial intentions of biomedical engineering graduates (EIG) in the study area.

*C. Test of Hypothesis Three*

**Ho3:** Laboratory and workshop content delivery does not influence entrepreneurial intentions of biomedical engineering graduates.

$$EIG = 12.911 + 0.608ELWCCK + 0.174ELWTM + 0.767ELWCD$$

S(b <sub>i</sub> ):	[0.109]	[0.637]	[0.242]
P-value:	{0.012}	{0.026}	{0.039}

From the regression equation above we have,  
 b<sub>3</sub> = 0.662

Standard deviation of b<sub>3</sub> = 0.242  
 H<sub>0</sub>: b<sub>3</sub> = 0  
 H<sub>0</sub>: b<sub>3</sub> = 0

Table VIII: Effect of engineering laboratory content delivery (ELWCD) on entrepreneurial intentions of graduates. Coefficients a.  
 Dependent Variable: EIG  
 Source: SPSS 20.0 Output for Field Survey, 2020

Model	Unstandardized Coefficients			Standardized Coefficients	T	Sig.
	B	Std. Error	Beta			
	(Constant)	12.911	4.083		.738	.465
1	ECCK	.646	.109	.608	.456	.012
	ELWTM	.184	.637	-.174	-1.137	.026
	ELWCD	.897	.242	.662	.894	.038

a. Dependent Variable: EIG  
 Source: SPSS 20.0 Output for Field Survey, 2020

$$EIG = 12.911 + 0.608ELWCCK + 0.174ELWTM + 0.767ELWCD$$

S(b <sub>i</sub> ):	[0.109]	[0.637]	[0.242]
P-value:	{0.012}	{0.026}	{0.039}

From the regression equation above we have,  
 b<sub>3</sub> = 0.662

Standard deviation of b<sub>3</sub> = 0.242  
 H<sub>0</sub>: b<sub>3</sub> = 0  
 H<sub>0</sub>: b<sub>3</sub> = 0  
 1/2 b<sub>3</sub> equals 0.331

Using the standard error test,  $S(b_3) > 1/2b_3$  above,  $0.242 < 0.331$ . We therefore have no option than to reject the null hypothesis and instead, accept the alternative one since the estimate b<sub>3</sub> is statistically significant at the 5% level of significance. This implies that laboratory and workshop content delivery (ELWCCK) significantly influence entrepreneurial intentions of biomedical engineering graduates (EIG).

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VII. SUMMARY, CONCLUSION AND RECOMMENDATION

A. Summary of Findings

The findings of this study show that:

1. Laboratory and workshop curriculum content knowledge significantly influence entrepreneurial intentions of biomedical engineering graduates.
2. Laboratory and workshop teaching methodology does not significantly influence entrepreneurial intentions of biomedical engineering graduates.
3. Laboratory and workshop content delivery (ELWCD) influence entrepreneurial intentions of biomedical engineering graduates.

B. Conclusion

Finding from the study reveal that engineering laboratory and workshop curriculum content knowledge influence entrepreneurial intentions of biomedical engineering graduates. There is no significant positive relationship between engineering laboratory and workshop teaching methodology and entrepreneurial intentions of graduates. The results show that the percentage of students across three disciplines of Engineering, Science and Business

Management aspiring to pursue entrepreneurial careers is somewhat high.

However, the percentage of students who confirmed their disinterest in entrepreneurship was higher among engineering students, who were never exposed to entrepreneurship education. Among the group who studied entrepreneurship, Business Management students were more inclined towards starting their own businesses compared to Science students. This result is consistent with Richardson's study (1993) that there is a significant difference between perceived contributions of education with different academic majors. It is anticipated that business students would be more disposed towards starting their own business, due to the nature of courses they are exposed to, including marketing, accounting and management courses. These courses provide students with further knowledge and know-how of starting and growing a business. Students of non-business specializations lack the exposure to the business world as their courses are more focused on technical aspects.

The comparison between intentions of students before and after being exposed to a dedicated course in entrepreneurship reveals education has significant positive entrepreneurial outcomes: students' intentions towards self-employment increases. Students acquire further knowledge about entrepreneurship; hence, their perception of self-employment alters to deem it a positive career choice. This finding confirms the conclusion that entrepreneurship education is related to becoming an entrepreneur. . Based on the findings of this study, it is recommended that entrepreneurship education should be practical oriented so as to sustain students' interest. Also, further study should be conducted to review what specific profiles derive the most benefit from entrepreneurship education.

### C. Recommendations

Based on the findings of this study, the following recommendations are made. Entrepreneurship education should be practical oriented so as to sustain students' interest. This research work has been able to contribute to the existing literature on entrepreneurship education/entrepreneurial intention in Nigeria and has also bridged the gap which exists between developed countries and developing countries with peculiar reference to Nigeria. Equally, this research has been able to identify the predictors of entrepreneurship education and how they influence entrepreneurial intention of graduates in South-South Nigeria.

### D. Suggestions for Future Research

A study should be conducted to review what specific profiles derive the most benefit from entrepreneurship education. The entire subject of target-specific entrepreneurship education merits more attention from researchers. What kind of entrepreneurship education program should be offered for what kind of group of participants and what would be realistic success measures? In this context, the whole field of entrepreneurship education research would benefit from a realistic assessment of what objectives of entrepreneurship education are appropriate for which life-cycle.

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