

## **ACQUISITION OF 21<sup>ST</sup> CENTURY SKILLS NEEDED FOR BUSINESS AND TECHNOLOGY EDUCATION GRADUATE EMPOWERMENT IN RIVERS STATE**

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### **Abstract**

*The study examined the acquisition of 21<sup>st</sup> century skills needed for Business and Technology Education graduate empowerment in Rivers State. Three research questions were answered with corresponding null hypotheses that were formulated and tested at 0.05 level of significance. The study employed the descriptive research survey design. The population of the study was 185 postgraduate students (master's and Doctorate) of 2021/2022 academic session. Due to small population size, census population was used. The instrument for data collection was a self-structured questionnaire tagged "Business and Technology Education Graduate Empowerment 21<sup>st</sup> Century Skill Questionnaire" which was design in the patterned of modified 4-point rating scale. The instrument was validated the test-retest method was used while Pearson Product Moment Correlation was used to establish a reliability coefficient of 0.87. Copies of the instrument retrieved were analysed using mean with standard deviation to answer research questions while the null hypotheses formulated were tested using z-test. The findings of the study show that innovative skills, digital skills and critical thinking skills identified in the study were needed as 21<sup>st</sup> century skills for graduate empowerment in Rivers State. Based on the findings of the study, it was recommended among others that individual students should be able to participate in different programmes that could enhance personal development to be innovative entrepreneurially as it is needed in 21<sup>st</sup> century jobs while regular workshop and seminars should be organized for lecturers to upgrade their skills and knowledge for easy transfer of knowledge to the students especially on the digital skills. This is because many lecturers are not using the e- technology.*

**Keywords:** 21<sup>st</sup> Century, Skills, Technology Education, Business Education, Acquisition, Empowerment and Graduate



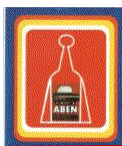
## **Introduction**

Technology is the systematic use of scientific knowledge to proffer solutions to real life practical problems daily. It can also be seen as the information, techniques and tools with which individuals utilize the available resources of their environment to satisfy the needs of mankind. According to Akaninwor (2010), technology could be seen as the effect of man's determinations to do things extra competently. Thus, from the foregoing, technology could be described as the appropriate application of scientific and technical knowledge and skills to proffer solutions to the numerous insatiable needs of man. Technology connotes the right use of technical and engineering tools, materials, apparatus, processes, and systems by man to solve daily issues of mankind. One major goal of technology is to bring about improvement in the world. Technology connotes the study, mastery and utilization of manufacturing methods and industrial arts to bring about viable industrial advancement in the world and one way of advancing technological innovations across the globe is through technology education (Owo & Deebom, 2020).

Technology education which comprised both general and specific education elements deal with the application of technological skills and expertise in the industry to meet targets (Akaninwor, 2010). Similarly, Tom and Pedro (2019) described technology education as a bulk of knowledge distinct from but linked to the sciences with precise accreditation requirements. Industrial technology education continued Tom and Pedro therefore involves a broad spectrum of knowledge and actions which offer chances to apply several academic notions through hands-on and minds-on applications capable of giving global relevance to these academic concepts. Technology education offer courses in broad areas of specialization such as mechanical and metal work technology, electrical/electronic technology, building and woodwork technology among others. These courses are designed to promote the inculcation of requisite theoretical knowledge as well as practical skills in the students for increased productivity and sustainability upon graduation. Technology education connotatively, implies the education for the acquisition of life skills which make an individual to be entrepreneurially self-reliance. To be self-reliance in the 21<sup>st</sup> century, certain skills are required especially in courses that provides its graduate opportunity to operate businesses and pursue entrepreneurship career such as Business Education.

Business Education is that educational program whose aim is to prepare students for career or roles in corporate organization. The roles in business may include as an employee, employer, entrepreneur or business educator in the field of business. Business Education as an instructive program that is offered at the higher institution which prepares students with variety of career choices available in private and public enterprises, by instilling in them innovative skill, managerial skill marketing skill, and communicative skills to function in today's business world. According to Auwal (2015), Business Education is a training system that encourages the beneficiary to acquire skills that fit into the world place of work. Business Education encourages attitudes, knowledge and skills needed by all citizens to effectively manage personal and public business in a volatile economic system. The under stated are some of the major objectives of Business Education as contained in section 6, sub-section 49 of the National Policy on Education (2004) as cited in Musa (2020) are to:

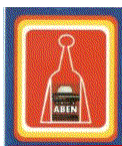
- i. provide the business knowledge and vocational skills necessary for industrial, commercial and economic development.
- ii. provide trained manpower in applied technology and commerce, particularly at subprofessional grades.
- iii. provide people who can apply scientific knowledge to the improvement and solution of economic and environmental problems for the use and convenience of man.
- iv. enable our young men and women to have an intelligent understanding of the increasing complexity of technology.



Clark (2002) defined Business Education as “an all-encompassing programme, which equips its recipient with the necessary knowledge, skills and attitudes that will enable him succeed in whatever business endeavour he may engage in”. According to Nolan, Hayden and Malsbary (2009), Business Education as those business programmes and courses taught ordinarily at the secondary school level. Business Education according to Ifelunni (2013) is the form of education which is properly planned and systematically tailored and applied for the cultivation of those who teach or will teach, particularly, but not exclusively in primary and post primary levels of schooling. It was further explained that it encompasses the training of administrators, supervisors, and guidance counsellors within the frame of reference. In this context, it is seen as the sum of pedagogical and content training given to one to enable him/her function at any level of education. Business Education which is usually offered at tertiary institutions is tailored towards enabling the would-be teacher acquire knowledge in general education, subject-matter area, professional education, or pedagogy area. This interdisciplinary nature of Business Education programme is designed to produce a good teacher. In the view of Nwosu (2003), Business Education at the university level is concerned mainly with the development of skills and knowledge needed to enable an individual function well. Isu (2004) defined Business Education as “that type of education that deals with the acquisition of practical skills, knowledge and values that enables one function effectively in the society”. Business Education is a collaborative programme in which educational and industrial sectors of any economy form partnership thereby preparing the individual to adequately fit into both industry and classroom as a professional. Since the world has gone digital in its entirety including the industries that employs the service of Business Education graduates, it will be no longer gainsaying that effectiveness of employees depends on the digital skills acquired that matches the needed skills by the employer.

Skill as defined by Okorie (2000) refers to human capacity to perform any activity with dexterity and competence. Skills can be seen as special abilities in a given occupation acquired through learning and practice (Samuel, 2017). In the same vein, Ogbuanya and Bakari (2014) described skill as that referring to individual's capability to regulate the components of behavior, thinking and feeling within definite contexts and within a specific task domain to perform tasks excellently. Skills therefore denote special abilities gained through committed learning and practice which enable an individual to become proficient in his or her work roles in a chosen occupational field. According to Deeborn and Taylor (2020), skills are the proficiency, expertise, and ability to acquire a type of craft requiring specialist training. The authors further aver that skill could be described as the ability of individual to be able to carry out a specialized area in entrepreneurial trade expertly for self-reliance. Thus, for students of technology education to achieve high level of competence in their respective fields of specialization, they need to develop their technical expertise for employment generation.

Graduate students of Business and Technology Education can create employment for themselves and others if they possess relevant skills from the programmes of study especially the 21<sup>st</sup> century skills. Again, the graduate of Business and Technology Education also need to put to use the acquired skills else they will not be able to remember how to use it anymore if they are not practicing. It is one thing to possess relevant skills and yet another to practice those skills for proficiency to secure paid employment or becoming self-employed. Skill development therefore can be seen as a lifelong development of relevant skills crucial for global improvement in the quality of life in core areas of health, environment, energy, natural resources, among others both in this present time and in the future. Developing competence in skills is critically indispensable for employment generation in Rivers State in this present 21<sup>st</sup> century. Some of the sellable and marketable skills needed to be acquire by graduate for its empowerment include opportunity skills, creative skills, problem-solving skills, digital skills, innovative skills, and critical thinking skills among others.

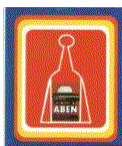


Digital skills are defined as a range of abilities to use digital devices, communication, applications, and networks to access and manage information. Digital skills give Business and Technology Education students the ability to find, evaluate, utilize, share, and create contents using information and communication technologies and the internet anywhere, anytime and any day to sale their products and services. Digital skills involve the use of automation in managing to achieve effective communication, branding, marketing, and getting the targeted audience for the supply of products and services (Afro digital as cited in Ukata, 2022). It is core part of business owner's toolkit in the 21<sup>st</sup> century, whether you are in charge of a multinational corporation or operating a local business from home. The five (5) top digital skills needed to succeed by today's entrepreneurs and acquire decent works are cloud computing, cyber security, data analysis, social media marketing and user experience (UX) design skills (Martinez, 2021). Other skills that are relevant to entrepreneurs of today that uses digital systems in business operations include creativity, problem-solving, innovation among others.

Innovativeness is the ability of introducing or using new ideas or ways of doing things. The process of innovation involves thinking creatively: Mbanefo and Chiaha (2014) stated that innovative learning environments focus on the facilitation and utilization of new knowledge acquisition modes, adoption of problem-solving strategies, integration of knowledge from diverse sources, utilization of self-directed learning, and knowledge extension through elaborate creative expression. Woodcock (2012) opined that acquiring a degree is not enough but may be augmented with innovative skills, abilities, and personal entrepreneurial competency. Business and Technology Education graduates are supposed to be employed or self-employed since they have been adequately trained, competent and innovative in establishing self-employed organizations, micro-enterprises, and small-scale enterprises. Hence, Hilton (2015) observed that instilling innovative and entrepreneurial skills in students is worthy because it can influence and facilitating their success in future workplace and citizenship. Business and Technology Education graduates need to be creative and innovative in skills to be able to adapt and respond swiftly to the societal needs and becoming self-reliant in the 21<sup>st</sup> century.

The concept of 21st century learning, and skill development involves learning motivated by practice of teaching students the most relevant, useful, current, and globally applied digital skills. Twenty first century Business and Technology Education students must be taught different skill from those of 20th century. The innovation and advancement in technology has made some of the courses in the Business and Technology Education curriculum to change. For instance, in Business Education; typewriting has changed to word/data processing technology. Also, the teaching of shorthand presently is sliding down into oblivion. Its relevance in the contemporary world of work has been questioned. according to Ndinechi (2001), shorthand is one of the trees in the forest of tillers under Business Education rubric. It has grown steadily over many years and now is dying a slow aimless death caused by rotting pockets of irrelevance. Similarly, in Technology Education, course like digital electronics is now added to the curriculum due to the advancement in global world of technology. Out-dated courses, skills and techniques should be doing away with. Business and Technology Education should be poised to prepare students and educators alike for jobs that that do not exist yet, teaching them how to learn, unlearn and relearn. According to Salisu (2021), quoting American writer Alvin Toffler, said 'the illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn'. The skill to be taught in this century should reflect the specific demands placed on today's students by the complex, competitive, knowledge-based, information-age, technology-driven economy, and society (The Glossary of Education Reform, 2016).

Digital compliance is expected to deliver three forms of literacy, namely, information communication literacy, media literacy and technology literacy. Once mastered, these forms of literacies help in the mastery of other skills needed (Trilling & Fadel, 2009). Today these



competencies (digital skills) may seem modern; they are not entirely new, but just newly important (Salas-Pilco, 2013). Acquiring skills has become a lot easier these days because someone has made the processes and uploads it on the internet. This becomes advantageous to digital skill compliant students. According to MindTools (2013, 2017) and Kutzhanova (2009) various categories of entrepreneurship skills such as personal characteristics, interpersonal skills, critical and Creative thinking, and practical skill can be acquired using digital tools. Hence, acquisition of these skills for functionality of graduates of Business and Technology Education becomes imperative in this present 21<sup>st</sup> century. This informs the researchers to examine how acquisition of these 21<sup>st</sup> century skills could enhance graduate empowerment in Rivers State.

### **Statement of the Problem**

Today, Vocational Education which comprises of both Business and Technology Education ensures that relevant skills that are necessary for job creation and employment for self-reliance are imparted to students for national development. However, Owo and Deebom (2020) have observed that technology education (Vocational Education) graduates in Nigeria are found to be lacking in skills acquisition making it difficult for them to secure paid employment in the world of work or become self-reliant after graduation. This development increases the rate of criminal activities in the society. According to Igberadja (2014), the Nigerian labour market reports that Nigerian graduates do not possess the requisite employable skills due to poor implementation of educational curriculum. Similarly, Yakubu and Akpan and Udoh as cited in Okwelle and Deebom (2017) had identified lack of productive and marketable skills as the major causes of unemployment as many youths are not adequately prepared to fit into the productive sector of the economy. It is based on this menace of inadequate skills acquisition by Business and Technology Education graduates for empowerment that informed the researchers to examine acquisition of digital skills, innovation and critical thinking skills needed for Business and Technology Education graduate empowerment in 21<sup>st</sup> century in Rivers State.

### **Purpose of the Study**

The purpose of the study is to examine the acquisition of 21<sup>st</sup> century skills needed for Business and Technology Education graduate empowerment in Rivers State. Specifically, the study sought to find out.

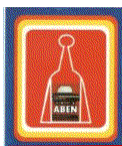
1. innovative skills needed for Business and Technology Education graduate empowerment in Rivers State.
2. digital skills needed for Business and Technology Education graduate empowerment in Rivers State.
3. critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State.

### **Research Questions**

The following questions were answered to guide the study.

1. What are the innovative skills needed for Business and Technology Education graduate empowerment in Rivers State?
2. What are digital skills needed for Business and Technology Education graduate empowerment in Rivers State?
3. What are critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State?





### **Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance to guide the study.

1. There is no significant difference in the mean response of Business and Technology Education postgraduate students on innovative skills needed for Business and Technology Education graduate empowerment in Rivers State.
2. There is no significant difference in the mean response of Business and Technology Education postgraduate students on digital skills needed for Business and Technology Education graduate empowerment in Rivers State.
3. There is no significant difference in the mean response of Business and Technology Education postgraduate students on critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State.

### **Methodology**

The study employed the descriptive research survey design. The study was carried out in Rivers State. The population of the study was all postgraduate students (master's and Doctorate Degree students) of Technology and Business Education in Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUE) of 2021/2022 academic session. As at the time of this study, Technology Education has 104 postgraduate students while Business Education has 81 postgraduate students Rivers State Universities making a total population of 185 students which was used for the study. Due to small population size, census survey sampling technique was adopted.

The instrument for data collection was a self-structured questionnaire tagged "Business and Technology Education Graduate Empowerment 21<sup>st</sup> Century Skill Questionnaire (BTEGECSQ)" which was designed in a modified 4-point rating scale of Highly Needed (HA), Needed (N), Not Needed (NN) and Highly Not Needed (HNN) with numerical values of 4, 3, 2 and 1 respectively. The instrument was validated by two experts: one in Business Education and another in Technology Education from Ignatius Ajuru University of Education and Rivers State University respectively. For reliability of the instrument, seven Technology Education and five Business Education postgraduate students that were outside the study year were selected and used through accidental sampling technique. The test-retest method was used while Pearson Product Moment Correlation (PPMC) was used to establish a reliability coefficient of 0.87. Out of 104 and 81 copies of the instrument that were administered to Technology and Business Education postgraduate students, only 92 and 73 copies of the instrument were completely filled and successfully retrieved and used for analysis.

To answer the research questions, mean with standard deviation were used while hypotheses formulated were tested with z-test at 0.05 level of significance. Decision on research questions were based on criterion mean of 2.50 such that item having a mean value that is equal to 2.50 and above was considered as skills "Needed (N)" while item having mean value less than 2.50 was considered as skills "Not Needed (NN)" for graduate empowerment in 21<sup>st</sup> century. For test of hypothesis, if the calculated value of z (zcal) is less than or equal to the critical value of z (zcrit), the null hypothesis was accepted otherwise reject the null hypothesis if the calculated value of z (zcal) is greater than the critical value of z (zcrit).

### **Results**

Results from the study were presented in Table 1 – 6 below.

**Research Question 1:** What are the innovative skills needed for Business and Technology Education graduate empowerment in Rivers State?



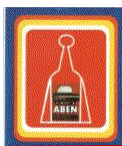
**Table 1: Mean Response of Postgraduate Students on Innovative Skills Needed for Graduate Empowerment in Rivers State**

S/N	Item Statement	Bus. Edu			Tech. Edu		
		XSD	RMK		X	SD	RMK
1	Innovative skills of being independent, imaginative, and constructive thinker.	3.20	0.84	N	2.97	0.73	N
2	Ability to identify and exploit new business opportunities.	3.44	1.02	N	3.15	0.66	N
3	Determination of program standards.	3.10	0.63	N	3.43	0.79	N
4	Ability to persistently research and find relevant information.	2.68	0.77	N	3.66	0.72	N
5	Ability to introduce new method.	3.01	0.82	N	2.63	0.53	N
6	Ability to formulate programs objectives.	3.33	1.10	N	3.84	0.88	N
7	Ability to turn ideas into reality.	3.54	0.67	N	3.21	1.03	N
8	Ability to introduce new product.	3.96	0.70	N	3.03	0.60	N
9	Ability to organize and build network.	3.84	0.96	N	3.68	0.70	N
10	The arrangement of various tasks in their appropriate sequence.	2.66	0.57	N	3.74	0.58	N
11	Ability to add value to customers satisfaction.	2.94	1.01	N	2.96	0.96	N
12	Ability to create new wealth by diversifying or expanding the business area.	3.04	1.11	N	2.83	0.68	N
13	Ability to diversify skills.	3.16	0.62	N	3.11	1.11	N
14	Ability to be proactive in decision making.	3.71	0.85	N	3.20	1.01	N
15	Ability to access new technologies and resources.	2.80	0.68	N	3.38	0.74	N
16	Application of skills other than those acquired in your own area of study in accomplishing tasks.	3.06	1.01	N	3.94	0.59	N
17	An orderly arrangement of tools and equipment.	3.31	0.77	N	3.77	0.84	N
18	How to use business goals to improve performance	3.84	1.11	N	3.11	0.63	N
19	Product promotion and merchandizing	3.66	0.68	N	3.36	0.77	N
20	Expansion of business internationally and advertise across-boarders	3.72	0.82	N	3.84	0.84	N
<b>Average Mean/SD</b>		<b>3.30</b>	<b>0.84</b>	<b>N</b>	<b>3.34</b>	<b>0.77</b>	<b>N</b>

**Source:** *Researcher's Field Result, 2022* N – Needed; NN – Not Needed

Table 1 shows respondents' responses on the innovative skills needed for Business and Technology Education graduate empowerment in Rivers State. Result from Table 1 revealed that all the items listed from 1 – 20 are needed for graduate empowerment in Rivers State with a mean value between 2.66 to 3.96 for Business Education postgraduate students and between 2.63 – 3.94 for Technology Education postgraduate students respectively. The result shows an average mean value of 3.30 and 3.34 with standard deviation of 0.84 and 0.77 for Business and Technology postgraduate students. The mean values were higher the criterion mean of 2.50 as a cut-off point for decision. Standard deviation value less than 1.00 indicate that the respondents were heterogenous in response while standard deviation value greater 1.00 shows that respondents were homogenous in response.

**Research Question 2:** What are digital skills needed for Business and Technology Education graduate empowerment in Rivers State?



**Table 2: Mean Response of Postgraduate Students on Digital Skills Needed for Graduate Empowerment in Rivers State**

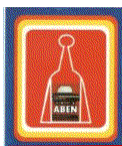
S/N	Item Statement	Bus. Edu			Tech. Edu		
		X	SD	RMK	X	SD	RMK
21	Ability to manage website	3.41	0.84	N	3.72	0.86	N
22	Ability to select appropriate marketing platforms	3.05	0.57	N	3.36	0.68	N
23	How to use the five pillars of social media marketing	2.80	0.63	N	3.28	0.54	N
24	Ability in internet marketing	3.23	0.74	N	3.11	0.96	N
25	Ability to use ICT hardware	3.44	0.52	N	3.69	0.78	N
26	Ability to use ICT software	3.96	1.01	N	2.75	0.66	N
27	Using social media platforms build brands	3.84	0.63	N	3.99	1.01	N
28	How to share and engage in business contents.	2.73	0.84	N	3.75	0.74	N
29	How to build a community of followers	3.02	0.70	N	3.65	0.65	N
30	Using social media platforms to increase productivity in clients' acquisition.	3.21	1.11	N	2.84	0.74	N
31	Using social media platforms build brands	2.74	0.89	N	3.44	0.69	N
32	Ability in posting products and services	2.95	0.75	N	3.20	0.74	N
33	Ability in using social media apps as marketing tools	3.47	0.66	N	3.66	0.55	N
34	Ability to advertise in other Websites	3.20	1.01	N	3.80	0.70	N
35	Ability to build local and international on-line presence	3.55	0.65	N	3.09	0.63	N
<b>Average Mean/SD</b>		<b>3.24</b>	<b>0.77</b>	<b>N</b>	<b>3.42</b>	<b>0.73</b>	<b>N</b>

Source: *Researcher's Field Result, 2022* N – Needed; NN – Not Needed

Table 2 shows respondents' responses on the digital skills needed for Business and Technology Education graduate empowerment in Rivers State. Result from Table 2 revealed that all the items listed from 21 – 35 are needed for graduate empowerment in Rivers State with a mean value between 2.73 to 3.96 for Business Education postgraduate students and between 2.75 – 3.99 for Technology Education postgraduate students respectively. The result shows an average mean value of 3.24 and 3.42 with standard deviation of 0.77 and 0.73 for Business and Technology postgraduate students. The mean values were higher the criterion mean of 2.50 as a cut-off point for decision. Standard deviation value less than 1.00 indicate that the respondents were heterogenous in response while standard deviation value greater 1.00 shows that respondents were homogenous in response.

**Research Question 3:** What are critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State?





**Table 3: Mean Response of Postgraduate Students on Critical Thinking Skills Needed for Graduate Empowerment in Rivers State**

S/N	Item Statement	Bus. Edu			Tech. Edu		
		X	SD	RMK	X	SD	RMK
36	Ability to understand the need for prioritization and order of precedence in problem solving.	3.10	1.01	N	3.38	1.02	N
37	Ability to comprehend and use language with accuracy and clarity.	3.28	0.95	N	3.05	0.77	N
38	Ability to recognize problems and finding ways of solving them.	3.03	0.61	N	3.70	0.93	N
39	Ability to gather and extract relevant information.	3.84	0.57	N	3.20	0.64	N
40	Ability to making structured reasoning concerning problems.	2.71	0.84	N	2.96	0.71	N
41	Ability to draw conclusion and make inferences.	2.59	0.63	N	3.14	0.66	N
42	Ability to understand the need for prioritization and order of precedence in problem solving.	3.41	0.56	N	3.02	0.80	N
43	Ability to understand motivation techniques.	3.62	0.74	N	3.28	0.69	N
44	Ability to be creative in recognizing investment opportunities.	3.84	1.01	N	2.84	1.01	N
45	Ability to be a good listener and create room for taking corrections.	2.94	0.68	N	3.07	0.74	N
46	Ability to be curious about the environment and adapt to change	3.33	0.84	N	3.22	0.57	N
<b>Average Mean/SD</b>		<b>3.23</b>	<b>0.76</b>	<b>N</b>	<b>3.17</b>	<b>0.78</b>	<b>N</b>

Source: *Researcher's Field Result, 2022* N – Needed; NN – Not Needed

Table 3 shows respondents' responses on the criticalthinking skills needed for Business and Technology Education graduate empowerment in Rivers State. Result from Table 3 revealed that all the items listed from 36 – 46 are needed for graduate empowerment in Rivers State with a mean value between 2.59 to 3.84 for Business Education postgraduate students and between 2.84 – 3.70 for Technology Education postgraduate students respectively. The result shows an average mean value of 3.23 and 3.17 with standard deviation of 0.76 and 0.78 for Business and Technology postgraduate students. The mean values were higher the criterion mean of 2.50 as a cut-off point for decision. Standard deviation value less than 1.00 indicate that the respondents were heterogenous in response while standard deviation value greater 1.00 shows that respondents were homogenous in response.

### **Test of Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance to guide the study.

1. There is no significant difference in the mean response of Business and Technology Education postgraduate students on innovative skills needed for Business and Technology Education graduate empowerment in Rivers State.



**Table 4: z-Test Analysis on Innovative Skills Needed for Graduate Empowerment in Rivers State**

Category	Mean	SD	N	df	$\alpha$	Zcal	Zcrit	Remark
Bus. Edu	3.30	0.84	73	163	0.05	-0.31	1.96	Accepted
Tech. Edu	3.34	0.77	92					

Source: *Researcher's Field Result, 2022* Accept Ho if  $z_{cal} \leq z_{crit}$ ; Otherwise Reject Ho.

Result from Table 4 reveals that the calculated value of z is -0.31 ( $z_{cal} = -0.31$ ) which is less than the critical value of z ( $z_{crit} = 1.96$ ). This implies that the null hypothesis of no significant difference was accepted. Hence, there is no significant difference in the mean response of Business and Technology Education postgraduate students on innovative skills needed for Business and Technology Education graduate empowerment in Rivers State.

2. There is no significant difference in the mean response of Business and Technology Education postgraduate students on digital skills needed for Business and Technology Education graduate empowerment in Rivers State.

**Table 5: z-Test Analysis on Digital Skills Needed for Graduate Empowerment in Rivers State**

Category	Mean	SD	N	df	$\alpha$	Zcal	Zcrit	Remark
Bus. Edu	3.24	0.77	73	163	0.05	-1.52	1.96	Accepted
Tech. Edu	3.42	0.73	92					

Source: *Researcher's Field Result, 2022* Accept Ho if  $z_{cal} \leq z_{crit}$ ; Otherwise Reject Ho.

Result from Table 5 reveals that the calculated value of z is -1.52 ( $z_{cal} = -1.52$ ) which is less than the critical value of z ( $z_{crit} = 1.96$ ). This implies that the null hypothesis of no significant difference was accepted. Hence, there is no significant difference in the mean response of Business and Technology Education postgraduate students on digital skills needed for Business and Technology Education graduate empowerment in Rivers State.

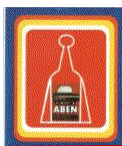
3. There is no significant difference in the mean response of Business and Technology Education postgraduate students on critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State.

**Table 6: z-Test Analysis on Critical Thinking Skills Needed for Graduate Empowerment in Rivers State**

Category	Mean	SD	N	df	$\alpha$	Zcal	Zcrit	Remark
Bus. Edu	3.23	0.76	73	163	0.05	0.49	1.96	Accepted
Tech. Edu	3.17	0.78	92					

Source: *Researcher's Field Result, 2022* Accept Ho if  $z_{cal} \leq z_{crit}$ ; Otherwise Reject Ho.

Result from Table 6 revealed that the calculated value of z is 0.49 ( $z_{cal} = 0.49$ ) which is less than the critical value of z ( $z_{crit} = 1.96$ ). This implies that the null hypothesis of no significant difference was accepted. Hence, there is no significant difference in the mean response of Business and



Technology Education postgraduate students on critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State.

### **Discussion of Findings**

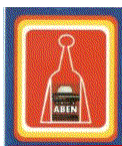
Result from Table 1 reveals that the respondents agree that item 1 – 20, listed are innovative skills needed for Business and Technology Education graduate empowerment in Rivers State. Some of these skills include ability to access new technologies and resources, ability to introduce new method, ability to introduce new product, ability to persistently research and find relevant information, expansion of business internationally and advertise across-boarders, ability to identify and exploit new business opportunities, product promotion and merchandizing, ability to create new wealth by diversifying or expanding the business area, ability to diversify skills and ability to be proactive in decision making among others. The finding of this study is in line with Olayini (2022) who found out that set of skills for graduate to succeed in 21<sup>st</sup> century include capacity to maintain and sustain on-line presence, how to register business on-line with Google, Facebook and other social media, how to stand out from competition on-line, product promotion and merchandizing, expand your business internationally and advertise in other websites among others. The study also agrees with Jwasshaka, Amin, and Dogara (2018) who found that innovative competencies need of Technical/Engineering students to be self-reliant include ability to formulate programme objectives, Application of skills other than those acquired in your own area of study in accomplishing tasks and Ability to diversify skills among others.

Result from Table 2 revealed that the respondents agree that item 21 – 35, listed are digital skills needed for Business and Technology Education graduate empowerment in Rivers State. Some of these skills include ability to manage website, ability in internet marketing, using social media platforms to increase productivity in clients' acquisition, ability to build local and international on-line presence, ability in posting products and services, ability to select appropriate marketing platforms, ability to build local and international on-line presence and ability to advertise in other websites among others. The finding of this study agrees with Ukata (2022) as aver that digital social media skills acquired by Business Education undergraduates for decent works in tertiary institutions in Rivers State include how to build a community of followers, ability to use ICT software, how to use the five pillars of social media marketing and ability in posting products and services and so on.

Result from Table 3 revealed that the respondents agree that item 36 – 46 listed are critical thinking skills needed for Business and Technology Education graduate empowerment in Rivers State. Some of these skills include ability to draw conclusion and make inferences, ability to be creative in recognizing investment opportunities, ability to gather and extract relevant information, ability to understand the need for prioritization and order of precedence in problem solving and ability to comprehend and use language with accuracy and clarity among others. The finding of this study is in corroboration with Okeke (2021) that critical thinking skills training required by Business Education students for business entrepreneurship include ability to understand the need for prioritization and order of precedence in problem solving, ability to gather and extract relevant information, ability to understand motivation techniques and ability to draw conclusion and make inferences among others.

### **Conclusion**

The study concludes that Business and Technology Education needs to acquire 21<sup>st</sup> century skills irrespective of profession or discipline. This is because it enhances self-reliant through paid or self-employment. The 21<sup>st</sup> century skills needed by these graduates as identified in this study include ability to access new technologies and resources, ability to introduce new method, ability to introduce new product, ability to persistently research and find relevant information, expansion of business internationally and advertise across-boarders, ability to manage website, ability in internet marketing, using social media platforms to increase productivity in clients' acquisition, ability to build local and



international on-line presence, ability in posting products and services, as well as ability to draw conclusion and make inferences, ability to be creative in recognizing investment opportunities and ability to gather and extract relevant information among others.

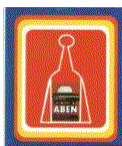
### **Recommendations**

Based on the findings of the study, the following recommendations were made;

1. Individual students should be able to participate in different programmes that could enhance personal development to be innovative entrepreneurially as it is needed in 21<sup>st</sup> century jobs.
2. University management should organized regular workshop and seminars for lecturers to upgrade their skills and knowledge for better transference on the students especially on the digital skills. This is because many lecturers are not e- technology friendly.
3. University management from time to time should provide learning environment that can promote and develop students' critical thinking by providing necessary facilities, equipment and materials for effective teaching and learning.

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