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Enhancing Curriculum Development and Delivery through Technological Adoption in Technical and Vocational Education Training (TVET) Institutions in Nigeria.

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ABSTRACT

In the dynamic landscape of education, the integration of technology plays a pivotal role in shaping the future of Technical and Vocational Education and Training (TVET) institutions. As Nigeria strives for socio-economic development, the need for a skilled workforce becomes increasingly crucial. This research paper delves into the realm of curriculum development and delivery within the context of TVET institutions in Nigeria, with a specific focus on the transformative potential of technological adoption. The research design used in this study was a descriptive research design. The primary data was generated through the field survey using structured questionnaires as a major research instrument. The sampling for the study was formulated using Taro Yamane sampling formulae. Quantitative data collected were analyzed, presented and interpreted using descriptive statistics. The research statistics used for this study is the Pearson correlation analysis and its method coefficient was used to test the level of significance. The study concluded that technological adoption is a global tool that must be recognized by both government and TVET institutions in its curriculum development and delivery. Among the recommendations is that funds should be made available for the TVET institutions for the procurement of technological devices that would aid curriculum development and delivery across the nation.

Keywords: Technology, vocational education, institutions, development

INTRODUCTION

Education will continue to be a crucial element of national development plans, as it is the most efficient approach for helping pupils change their deviant conduct. According to Latifa (2018), education is an effective approach for fostering a deep understanding of new ideas that emphasise human development and self-regulation of learning processes. It is also a powerful tool for facilitating transformation. Every significant shift in a society's intellectual or social outlook must be preceded by a radical

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transformation in education. However, in order to survive in this age of globalisation, educational institutions must develop the capacity to be more flexible, responsive, and adaptable. Organisational transformation refers to the systematic process of updating an institution from its present condition to a desired future condition with the aim of improving its performance (Rasid-Bin, 2018).

Learning institutions are established social settings where the processes of teaching and learning take place with the purpose of moulding and cultivating the future generation of persons. Therefore, it is crucial to continuously adjust to changes in the organisation in order to establish a successful and efficient learning environment. Nevertheless, it is incumbent upon institutions to support every student in attaining their utmost capabilities. Furthermore, it is imperative for them to use a suitable teaching methodology that assists and enables every student to improve their overall academic achievement. To attain these expected results, governments must grant access to information and communication technology (ICT) infrastructure and resources to different institutions, therefore enabling the processes of teaching and learning. In the world nowadays, ICT is now playing the function as blood in the human body. Human being and communication gadgets are becoming inseparable. People now do a lot of things simultaneously without creating extra time for it because of the rate of growth witnessed in the use of technologies. For instance, a person can be learning while on transit through different gadgets like phones and laptops. The lack of relevant technology-driven skills among young people in undeveloped countries hinders their participation in productive social and economic activities, despite the growing trend in technology (GeSci, 2018).

Furthermore, policymakers are acknowledging the need of implementing legislation that promote self-employment and work opportunities for teenagers. It is imperative for these programs to take into account the swiftly changing labour market and technology progress that have generated fresh prospects, eradicated previous ones, and implemented novel working structures. At now, many governments consider ICT to be a crucial component of a responsive, demand-oriented system for Technical and Vocational Skills Development (TVSD) and TVET. The present system has been specifically developed to cater to the requirements of students in both structured and informal educational settings (Ilokanulo, 2020). The pace of progress in technical education in Nigeria was somewhat slower than that of literacy education, which was mostly driven by volunteer groups. Furthermore, the Christian missions prioritised a native's proficiency in reading the Bible over their capability to operate tools such as turning screws and priming water-pumps. This preference was partly influenced by the higher cost involved in terms of personnel and equipment (Akanbi, 2017).

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Technical and Vocational Education and Training (TVET) institutions in Nigeria stand at the forefront of cultivating a workforce that is not only adept in traditional skills but is also equipped to meet the demands of a rapidly evolving technological landscape. This paper seeks to explore the intersection between curriculum development, instructional delivery, and the integration of technology to foster a more responsive and future-ready educational framework. Nigeria, as a nation, is witnessing a paradigm shift in its socio-economic structure, with an increasing emphasis on technology-driven industries. To bridge the gap between traditional education and the demands of the contemporary job market, TVET institutions must evolve their curricula and instructional methods. The study aims to investigate the current state of curriculum development and instructional delivery in Nigerian TVET institutions, identifying gaps that can be addressed through technological integration.

The main objective of this study is to explore how curriculum development and delivery can be enhanced through technological adoption in Technical and Vocational Education Training (TVET) Institutions in Nigeria using The Federal Polytechnic, Ilaro as a study while, the specific objectives are;

Assess the current state of curriculum development and instructional delivery in Nigerian TVET institutions using the Federal Polytechnic, Ilaro as a study.

Explore the impact of technological adoption on curriculum enhancement and instructional methodologies at the Federal Polytechnic, Ilaro.

Identify challenges and opportunities associated with integrating technology into TVET education at the Federal Polytechnic, Ilaro.

Propose recommendations for optimizing technological adoption in TVET institutions to meet industry demands using the Federal Polytechnic, Ilaro as a study.

METHODOLOGY

The method of descriptive surveying was used to conduct the study. All of the instructors and students of the Federal Polytechnic, Ilaro, made up the study's population. A total of 150 responses were chosen at random, comprising 20 lecturers and 130 students. Data was gathered from the respondents using an organized, open-ended questionnaire. The research instrument is in Two categories; Category A deals in demographic information of respondents, while B deals with questions to respondents on curriculum development and delivery through technological adoption in Technical and Vocational Education Training (TVET) Institutions in Nigeria using The Federal Polytechnic, Ilaro.

The format of the questions followed the five-point Likert scale of measuring. Three descriptive statistics were applied to the collected data: mean, frequency, and percentage.

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RESULTS AND DISCUSSIONS

Table A: Frequency Distribution of the Demographic Information of the Respondents

Information	Frequency	Percentage
Gender		
Male	85	57.00
Female	65	43.00
Age		
18-25	96	64.0
26-30	34	23.00
31-35	12	8.00
40 & Above	8	5.00
Status		
Lecturer	20	13.00
Student	130	87.00
Qualifications		
Ph.D	5	3.00
MSc	8	5.00
BSc	7	5.00
HND	75	50.00
OND	55	37.00
Teaching Experience		
1-10 Years	9	45.00
11-20 Years	6	30
21-30 Years	5	25.0

Field Survey, 2024

The table above shows that majority of the respondents are male 85 (57%), 96 (64%) of the respondents are between the age of 18-25 years, 130 (87%) are students, 75 (50%) are HND students and 9(45%) had 1-10 years of teaching experience.

Questions on Curriculum Development and Delivery through Technological Adoption in Technical and Vocational Education Training (TVET) Institutions in Nigeria using The Federal Polytechnic, Ilaro.

Research Question One: What is the current state of curriculum development and instructional delivery in TVET institutions across Nigeria using the Federal Polytechnic, Ilaro as a study?

Item	Respond	Frequency	Percentage
Federal Polytechnic, Ilaro review and update its curriculum often	Strongly Agree	25	16.7
	Agree	125	83.3
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Technological advancements is one of the reasons for	Strongly Agree	100	66.7
	Agree	50	33.3

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curriculum review and update	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
The Federal Polytechnic, Ilaro ensures that the curriculum aligns with current industry standards and practices	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
The Federal Polytechnic, Ilaro has adopted ICT in its curriculum development and instructional delivery	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Effective integration of technology in instructional delivery aids academic performance among students at the Federal Polytechnic, Ilaro	Strongly Agree	100	66.7
	Agree	50	33.
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-

Source: Field survey, 2024

This section examined the curriculum development and instructional delivery in TVET institutions across Nigeria. To achieve this objective, five variables were tested through the opinion of the respondents.

The first variable shows that Federal Polytechnic, Ilaro review and update its curriculum oftenthis was supported by 125(83.3%) of the respondents who agreed with the statement, while 25(16.7%) of the respondents strongly agreed. 100(66.7%) of the respondents strongly agreed that technological advancements is one of the reasons for curriculum review and update student while 50(33.3%) of the respondents agreed with the statement. Since majority of the respondents strongly agreed with statement, therefore it is concluded thattechnological advancements is one of the reasons for curriculum review and update.

The Federal Polytechnic, Ilaro ensures that the curriculum aligns with current industry standards and practices, this statement was supported by 75(50.0%) of the respondents who strongly agreed and agreed respectively. The response gathered on Federal Polytechnic, Ilaro has adopted ICT in its curriculum development and instructional delivery show that 75(50.0%) of the respondents strongly agreed and agreed with the statement respectively.

However, 100(66.7%) and 50(33.3%) of the respondents strongly agreed and agreed respectively that effective integration of technology in instructional delivery aids academic

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performance among students at the Federal Polytechnic, Ilaro. Since majority of the respondents strongly agreed with statement, therefore it is concluded thateffective integration of technology in instructional delivery aids academic performance among students at the Federal Polytechnic, Ilaro.

Research Question Two: How impactful is technological adoption on curriculum enhancement and instructional methodologies in TVET institutions across Nigeria using the Federal Polytechnic, Ilaro as a study?

Item	**Respond**	**Frequency**	**Percentage**
Federal Polytechnic, Ilaro has integrated technology currently into the curriculum development processes	Strongly Agree	50	33.3
	Agree	100	66.7
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
The usage of technology is currently in use for instructional delivery at the Federal Polytechnic, Ilaro	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Technology has enhanced instructional methodologies in comparison to traditional methods at the Federal Polytechnic, Ilaro	Strongly Agree	50	33.7
	Agree	100	66.7
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
There are drawbacks associated with the integration of technology in curriculum development or instructional delivery at the Federal Polytechnic, Ilaro	Strongly Agree	25	16.7
	Agree	125	83.3
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Instructors are trained often in the use of technology for curriculum development and instructional delivery at the Federal Polytechnic, Ilaro	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-

Source: Field survey, 2024

This section evaluates the impact of technological adoption on curriculum enhancement and instructional methodologies in TVET institutions across Nigeria. To achieve this objective, five variables were subjected to examination from the respondents.

The respondent were asked if Federal Polytechnic, Ilaro has integrated technology currently into the curriculum

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development processes and the response gathered show that 66.7% (100) of the respondent strongly agreed while 33.3% (50) of the respondent agreed to the statement. This showed that integrated technology has currently been used into the curriculum development processes. The result indicated that 50.0% (50) of the respondent agreed and strongly agreed respectively that usage of technology is currently in use for instructional delivery at the Federal Polytechnic, Ilaro. This show that technology is currently adopted for instructional delivery at the Federal Polytechnic, Ilaro.

Technology has enhanced instructional methodologies in comparison to traditional methods at the Federal Polytechnic, Ilaro this was confirmed by the response gathered from the respondent in which 66.7% (100) agree with this position. In the same view, 83.3% (125) of the respondent agree that there are drawbacks associated with the integration of technology in curriculum development or instructional delivery at the Federal Polytechnic, Ilaro.

The last variable tested shows if instructors are trained often in the use of technology for curriculum development and instructional delivery at the Federal Polytechnic, Ilaro. However, the statement was supported by 75(50.0%) of the respondents who agreed and strongly agreed respectively. This shows that instructors are trained often in the use of technology for curriculum development and instructional delivery at the Federal Polytechnic, Ilaro.

Research Question Three: What are the challenges and opportunities associated with integrating technology into TVET education at the Federal Polytechnic, Ilaro?

Item	Respond	Frequency	Percentage
There are challenges encountered in integrating technology into TVET education at the Federal Polytechnic, Ilaro	Strongly Agree	75	50.0
	Agree	50	33.3
	Undecided	25	16.7
	Disagree	-	-
	Strongly Disagree	-	-
Irregular power supply hinders the use of Computers at the Federal Polytechnic, Ilaro	Strongly Agree	50	33.3
	Agree	50	33.3
	Undecided	25	16.7
	Disagree	25	16.7
	Strongly Disagree	-	-
Lack of adequate equipment andinfrastructural facilities exist at the Federal Polytechnic, Ilaro	Strongly Agree	25	16.7
	Agree	25	16.7
	Undecided	25	16.7
	Disagree	50	33.3
	Strongly Disagree	25	16.7
Lack of funds to maintain the few available computers and other	Strongly Agree	25	16.7
	Agree	125	83.3
	Undecided	-	-

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ICT facilities is a challenge affecting Curriculum development and delivery at the Federal Polytechnic, Ilaro	Disagree	-	-
	Strongly Disagree	-	-
There are observed benefits anticipated as a result of integrating technology into TVET education at the Federal Polytechnic, Ilaro	Strongly Agree	50	33.3
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	25	16.7

Source: Field survey, 2024

This section examined the challenges and opportunities associated with integrating technology into TVET education at the Federal Polytechnic, Ilaro. To achieve this objective, five variables were tested through the opinion of the respondents.

The respondents were asked if there are challenges encountered in integrating technology into TVET education at the Federal Polytechnic, Ilaro. 75(50.0%) of the respondents strongly agreed and 50(33.3%) agreed with this position. Irregular power supply hinders the use ofComputers at the Federal Polytechnic, Ilaro. 50(33.3%) of the respondents strongly agreed and agreed respectively while 25(16.7%) of the respondentsdisagreed and undecided with the statement respectively. This indicated that Irregular power supply hinders the use ofComputers at the Federal Polytechnic, Ilaro

Another challenge identified through the survey is if lack of adequate equipment andinfrastructural facilities exist at the Federal Polytechnic, Ilaro, the result shown that 25(16.7%) of the respondents agreed, strongly agreed and strongly disagreed with the statement respectively while 50(33.3%) disagreed with the statement. This indicated the Federal Polytechnic Ilaro does not lack adequate equipment and infrastructural facilities. Lack of funds to maintain the few available computers and other ICT facilities is a challenge affecting Curriculum development and delivery at the Federal Polytechnic, Ilaro was also tested where the result revealed that 50(33.3%) strongly agreed with the statement while 75(50.0%) of the respondents were undecided.

The last variable tested shows that there are observed benefits anticipated as a result of integrating technology into TVET education at the Federal Polytechnic, Ilaro. This was supported by 75(50.0%) of the respondents strongly agreed with the statement while 50(33.3%) of the respondents agreed with the claim

Research Question Four: What are the recommendations for optimizing technological adoption in TVET institutions to meet industry demands using the Federal Polytechnic, Ilaro as a study?

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Item	Respond	Frequency	Percentage
Training and retraining should be made to the Lecturers on the utilization of ICT in the teaching of technical education. at the Federal Polytechnic, Ilaro	Strongly Agree	100	66.7
	Agree	50	33.3
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Sufficient Funds should be made available for the TVET curriculum delivery at the Federal Polytechnic, Ilaro	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Awareness within TVET institutions about the specific technological needs and trends in relevant industries should be prioritized	Strongly Agree	125	83.3
	Agree	25	16.7
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
TVET institutions in Nigeria should enhance collaboration with industries to ensure the integration of relevant technologies in its curriculum delivery	Strongly Agree	-	-
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-
Resistance to change within TVET institutions in Nigeria be addressed to facilitate smoother technological integration	Strongly Agree	75	50.0
	Agree	75	50.0
	Undecided	-	-
	Disagree	-	-
	Strongly Disagree	-	-

Source: Field survey, 2024

This section examined the recommendations for optimizing technological adoption in TVET institutions to meet industry demands. To achieve this objective, five variables were tested through the opinion of the respondents.

When examining ifTraining and retraining should be made to the Lecturers on the utilization of ICT in the teaching of technical education. at the Federal Polytechnic, Ilaro, 100(66.7%) of the respondents strongly agreed while 50(33.3%) also agree to the statement. Also, on the statement that Sufficient Funds should be made available for the TVET curriculum delivery at the Federal Polytechnic, Ilaro, which was examined, 75(50.0%) of the respondent agree and

strongly agreed respectively with the statement. This indicated that the respondents supported the claim that Sufficient Funds should be made available for the TVET curriculum delivery at the Federal Polytechnic, Ilaro.

When examining if awareness within TVET institutions about the specific technological needs and trends in relevant industries should be prioritized, 125(83.3%) strongly agreed while 25(16.7%) agreed with the statement. The fourth variables shows that 75(50.0%) strongly agreed and agreed respectively that TVET institutions in Nigeria should enhance collaboration with industries to ensure the integration of relevant technologies in its curriculum delivery.

The last variable tested shows if resistance to change within TVET institutions in Nigeria be addressed to facilitate smoother technological integration. However, the statement was supported by 75(50.0%) of the respondents who agreed and strongly agreed respectively with the statement.

CONCLUSION

As Nigeria navigates the complexities of a globalized economy, the evolution of TVET institutions becomes imperative. This research endeavors to shed light on the transformative potential of technological adoption in enhancing curriculum development and delivery, ultimately contributing to the development of a skilled and adaptable workforce crucial for Nigeria's sustainable growth. Based on the discussions presented, the study draws its conclusion that technological adoption is a global tool that must be recognized by both government and TVET institutions in its curriculum development and delivery.

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