

ASSESSING DIGITAL RESOURCES IN CURRICULUM OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING FOR SKILLS DEVELOPMENT IN KANO STATE TERTIARY INSTITUTIONS.

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Abstract

The study assessed digital resources in curriculums of Technical and Vocational Education and Training for skills development in Kano State tertiary institutions. The descriptive research design was used for this study. Two specific research purposes, two research questions and two hypotheses guided the study. The population of the study is 195 lecturers teaching TVET courses in five tertiary institutions in Kano State. The stratified sampling technique was used to select 108 lecturers from the population. The instrument for data collection was a questionnaire structured in a Likert scale format titled: Exploiting Digital Resources in Technical and Vocational Education and Training Curriculum Tertiary Institutions for Students Skills Development (EDRTVETETCISSD). The instrument was validated by three experts in the field of TVET and tested for reliability using Cronbach Alpha and this gave reliability coefficients of 0.794. The data analyses were done using mean and standard deviation to answer the research questions, while t-test was used to test the null hypotheses. Based on the data collected and analysed, the study identified 15 digital resources needed for skills development in TVET curriculum, and 5 suitable digital resource among TVET students in tertiary institution for skills development. The findings revealed that digital resources enhance students' skills development in tertiary. It was recommended that equitable access to high-quality digital learning materials and tools is crucial to avoid exacerbating existing educational inequalities and TVET institutions should conduct a comprehensive needs assessment by surveying instructors, students, and industry professionals to identify the specific skills students need to develop.

Keywords: Curriculum, Digital Resources, Skills Development, Student, TVET Institutions.

Introduction

Federal Republic of Nigeria (FRN) (2013) in the National Policy on Education (NPE), used the nomenclature: Technical and Vocational Education and Training (TVET) to conceptualize vocational and technical education as 'those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life'. From this definition, VTE can be seen as a process of education which combines both the liberal and practical training in the

development of individuals towards various occupations. According to Oketch (2014) vocational education is no longer simply training to facilitate job entry, but a way to facilitate vocational-specific skills over lifetime.

According to Njoku (2014), the reputation of TVET institutions is dependent on their ability to produce qualified young people who will be immediately operational in the workplace. Technical and Vocational Education and Training refers to the educational processes that entail the study of technologies and related sciences and the acquisition of practical skills and knowledge aimed at preparing the individual for employment in various sectors of economic and social life and also to be self-employed. This has given rise to the reason why in recent times, the economic, technological, demographic, societal and educational context in which vocational and technical education is practiced has changed (European Commission, 2010). These changes offer a great challenge to the delivery of vocational and technical education. Vocational and technical education must respond appropriately to these changes to remain relevant in preparing individuals to take advantage of the opportunities for the kind of workforce needed in today's world of work. In this regard, effective leadership becomes an important variable that must be considered in the new vocational education environment. UNESCO (2016), opined TVET that encompasses formal, non-formal, and informal learning processes aimed at equipping people with practical and technical skills tailored to specific trades or professions.

A digital resource is defined as a resource that requires access to the computer or any electronic product that provides a collection of data, be it text referring to full-text databases, electronic journals, image collections, other multimedia and media-based products. Numerical, graphic or temporal values, such as a commercially available title that was published for the purpose of commercialization. These can be delivered on CD ROM, on tape, over the Internet, etc. In recent years, several related techniques and standards have been developed that allow you to create and distribute documents digitally. So, to cope with the current situation, librarians are moving to new means of communication, that is, digital assets for their development of compilation of documents from users who are better satisfied. Digital assets in magnetic and optical media have a major impact on the collections of university libraries. These are most useful due to the inherent capabilities of manipulation and investigation, if access to information is cheaper to acquire information resources, savings in terms of conservation and maintenance, etc. and sometimes the electronic format is the only alternative.

The term “digital resources” refers to information resources that can be accessed through the Internet-connected devices. Electronic journals, electronic books, online databases, locally loaded databases, websites, CD-ROM, electronic text, e-news, e-images, and electronic music are all examples of DR. DR has been hailed as one of the most essential sources of information for students (Ternenge & Kashimana, 2019), as it offers them current and relevant information on a variety of topics. Digital resources are 'handier than print resources because they enable access to materials that might otherwise be denied to consumers owing to geographic location, economics, or other constraints (Lo et al., 2017). DR provides students with new opportunities that earlier generations did not have. DR can be used to encourage students to learn actively and independently while also collaborating with others. According to Adeniran (2013), DR has the potential to increase students' academic performance by providing them with appropriate and up-to-date information items.

According to UNESCO (2018), skill development in TVET encompasses a wide range of learning experiences aimed at improving the productivity, innovation, and employability of the workforce. This includes technical skills directly related to a specific occupation, as well as soft skills such as communication, teamwork, and problem-solving that are critical for overall job performance. Maclean and Wilson (2009) emphasize that effective skill development programs in TVET are characterized by their relevance to industry needs, incorporating hands-on training, work-based learning opportunities, and up-to-date curricula that reflect technological advancements and industry standards. Additionally, the involvement of employers in the design and delivery of training programs ensures that the skills being developed are those most valued by the job market.

Brown (2006) refers to Curriculum to all students' school experiences relating to the improvement of skills and strategies in thinking critically and creatively, solving problems, working collaboratively with others, communicating well, writing more effectively, reading more analytically, and conducting research to solve problems. Adebayo & Lawal (2011), curriculum refers to a group of courses or planned experiences in proper sequence of topics designed to prepare an individual for efficient service in a specific vocation, it is the offering of socially valued knowledge, skills and attitudes that is made available to students through a variety of arrangements in schools, colleges or universities or other arrangements. Onyi (2012) sees a curriculum that consists of all the learning experiences or educational programmes planned for students under the auspices of the school. Curriculum is a standards-based sequence of planned experiences where students practice and achieve proficiency in content

and applied learning skills. Curriculum is the central guide for all educators as to what is essential for teaching and learning, so that every student has access to rigorous academic experiences. The structure, organization, and considerations in a curriculum are created to enhance student learning and facilitate instruction. Curriculum must include the necessary goals, methods, materials and assessments to effectively support instruction and learning.

Statement of the Problem

Technical and Vocational Education and Training (TVET) is essential for socio-economic growth, providing hands-on skills for various industries. In the digital era, the success of TVET programs depends on effectively integrating digital resources into education. However, there is a significant gap in assessing how these resources are utilized in TVET curricula in Kano State. While some institutions have invested in digital infrastructure, there is a lack of systematic evaluation of their effectiveness, which affects graduates' digital competencies and employability. The study aims to evaluate the use and impact of digital resources in Kano's TVET programs, identify challenges, and propose recommendations to optimize these resources for better skill development and workforce readiness.

Purpose of the Study

The following specific Purposes sought to:

1. Determine the digital resources needed in the TVET institution's curriculum for students' skills development?
2. Ascertain the extent to which the identified digital resources are suitable for students' skills development.

Research Questions

The following research questions guided the study:

1. What are the digital resources needed in the TVET institution's curriculum for students' skills development.
2. To what extent are the identified digital resources being suitable for students' skills development.

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

H01: there is no significant difference in the mean ratings of male and female students on digital resources needed in the TVET institution curriculum for skills development

H02: there is no significant difference in the mean ratings of male and female students on suitability of the identified digital resources for students' skills development in TVET

Methodology

The study adopted descriptive survey research design. According to Nworgu (2015), descriptive survey research design is one in which a group of people or items is studied by collecting and analyzing data from only a few people or items considered to be representative of the group. This design, therefore, was considered appropriate for the study as it collected data on the opinions of TVET students in tertiary institution Kano State, Nigeria. The study was carried out in three universities in Kano State. The population for the study is 303 TVET students. This comprises of 108 male TVET students and 195 female TVET students in Kano State. The stratified sampling techniques were used to select the population. The data for the study were collected using a 20-item structured questionnaire.

The instrument was structured on a 5 – point Likert type scale of Very Highly Needed (VHN) 5 points, Highly Needed (HN) 4 points, Moderately Needed (MN) 3 points, Not Needed (NN) 2 points, Highly Not Needed (HNN) 1 point and Very High Extent (VHE) 5 points, High Extent (HE) 4 points, Moderate Extent (ME) 3 points, Low Extent (LE) 2 points and Very Low Extent (VLE) 1 point. Three experts in business education validated the questionnaire. The questionnaire has a reliability index of 0.794, which was established through a trial test on 10 students in federal university Zaria. The internal consistency was determined using Cronbach Alpha procedure. Copies of the questionnaire were administered and collected by the researchers with the help of two research assistants after proper briefing on the purpose of the study. The questionnaire was administered to the respondents at their various institutions. On the spot retrieval was made for those who filled in their questionnaire. The data collected from the respondents were analysed using descriptive statistics, that is mean and standard deviation for answering the research questions while the null hypotheses were tested using t-test statistics at 0.05 level of significance. For taking decision on the research questions, a benchmark of 3.50 was used at cut-off point. Hence, any item with mean value of 3.50 and above was interpreted “Needed” and “Extent” while item with mean value of less than 3.50 was interpreted as “Not Needed” and “Not Extent” decision for hypotheses were made based on the calculated t-test value. The null hypothesis was accepted when the t-calculated value is less than the t-table value of 1.96 at 0.05 level of significance. On the other hand, the null hypothesis was not rejected when the t-calculated value is greater than the t-table value of 1.96 at 0.05 level of significance

Results

Research Question 1: What are the digital resources needed in the TVET institution's curriculum for students' skills development?

Table 1: Mean responses on digital resources needed in the TVET curriculum for students' skills development

	digital resources needed for Students' Development	Mean	SD	Remarks
1.	Laptops	3.76	0.76	HN
2.	Video conferencing platforms	3.53	0.83	HN
3.	Project management tools	3.30	1.03	HN
4.	Cloud storage platforms	3.03	0.82	HN
5.	Online quizzes and tests	3.13	1.11	HN
6.	Educational videos and tutorials	3.20	0.98	HN
7.	Interactive simulations and virtual labs	3.90	0.80	HN
8.	E-books and online textbooks	3.80	0.87	HN
9.	Industry-specific websites and blogs	3.00	1.76	HN
10.	Open educational resources	3.70	0.71	HN
11.	Text-to-speech and speech-to-text software	3.50	0.50	HN
12.	Alternative formats of learning materials	3.10	0.94	HN
13.	E-mailing	3.83	0.54	HN
14.	Online Referencing Materials	3.53	0.83	HN
15.	Browsers	3.10	0.83	HN
	Weighted Average	3.42	0.88	HN

Source: Field survey, 2024

The data in table 1 show that items from 1 to 15 are highly needed with a weighted average of mean of 3.42 and standard deviation of 0.88 shows that the respondents strongly agreed that the identified digital resources are seriously needed for TVET students' skills development.

Research Question 2: To what extent are the identified digital resources being suitable for students' skills development?

Table 2: Analysis of Mean responses on digital resources for suitable TVET students' skills development

S/N	digital resources are suitable for students' skills development	X	SD	Remark
1.	Video conferencing platforms	3.56	1.91	VHE
2.	Online Referencing Materials	3.71	1.92	VHE
3.	Educational videos and tutorials	3.09	1.75	VHE
4.	Software/Hardware	3.69	1.91	VHE
5.	E-books and online textbooks	3.71	1.92	VHE
	Weighted Average	3.55	1.88	VHE

Source: Field survey, 2024

The data presented in table 2 with weighted average mean 3.71 and standard deviation of 1.92 indicates that the identified digital resources are suitable for TVET students' skills development.

Hypotheses

The null hypotheses were tested as follows:

Null Hypothesis One: There is no significant difference in the mean ratings of digital resources needed in the TVET institution curriculum for students' skills development

Table 3: t-test analysis of the mean ratings of male and female TVET students on the digital resources needed for skills development

Groups	N	Mean	SD	t-cal	t-tab	Level of Sig	Decision
Male	86	3.00	0.77	1.22	2.00	0.05	Not Significant
Female	22	3.06	0.66				

Source: Field survey, 2024

Result in 3 shows that the t-tabulated, 2.00 is less than the t-calculated 1.22 thus we accept the null hypothesis. This implies that at 0.05 level of significance there is no significant difference between the mean rating of male and female TVET students on the digital resources needed by TVET students for skills development.

Null Hypothesis Two: there is no significant difference in the mean ratings of identified digital resources are suitable for students' skills development in TVET

Table 4: t-test analysis of the mean ratings of male and female TVET students on the digital resources suitable for skills development

Groups	N	X	SD	t-cal	t-tab	Level of Sig	Decision
Male	86	2.67	0.75	1.02	2.00	0.05	Not significant
Female	22	3.05	0.66				

Source: Field survey, 2024

Result in table 4 shows that the t-calculated, 1.02 is less than t-tabulated 2.00 thus we accept the null hypothesis. This implies that 0.05 level of significance there's no significant difference

between the mean ratings of male and female TVET lecturers on the digital resources suitable for TVET students for skills development.

Discussion of Findings

This study identified digital resources needed in the TVET institution's curriculum for students' skills development such as Laptops, Video conferencing platforms, Project management tools, Cloud storage platforms, Online quizzes and tests, educational videos and tutorials, Interactive simulations and virtual labs etc. Digital resources encompass all materials accessible online through technological devices (Okunlola, 2021). This includes elements like computer networks, the internet, desktop and laptop computers, tablets, smartphones, CD-ROMs, memory card readers, projectors, the World Wide Web, and digital libraries. Digital literacy skills represent a comprehensive set of knowledge, competencies, abilities, attitudes, and behaviors crucial for effectively interacting with and utilizing digital devices such as smartphones, tablets, laptops, and desktop computers, as well as interconnected technologies. These skills enable individuals to perform tasks competently and efficiently. The result was also in agreement with the findings of Owoko, (2024) that digital literacy skills are very essential in accessing and utilizing electronic information resources. Beyond academic pursuits, digital literacy skills empower students to easily obtain e-books, e-journals, online novels, newspapers, magazines, and other creative works for recreational reading. Alongside this is the need for training for teachers and students.

The findings in question two revealed that digital resources are suitable for identification among TVET students for skills development to include: Video conferencing platforms, Online Referencing Materials, Educational videos and tutorials, Software/Hardware and E-books and online textbooks. In line with UNESCO-UNEVOC International Centre for TVET (2020) explained that, integrating suitable digital resources in TVET curriculum is now an imperative, supporting pedagogical and labour market relevance, as well as the development of students as lifelong learners. digital literacy simplifies accessing electronic information to solve academic problems, such as completing assignments, writing research papers, or conducting research. Advantage of digital resources in TVET according to Thompson in Alu (2011) is the ability for online education to help student acquire technology skills and have increased familiarity with technology, also high-quality internet courses and networking help to deliver high quality courses. In agreement with these findings OECD (2021) found that digital technologies can complement and make the work of teachers more effective and

beneficial to students, since technologies applied to teaching and training change the way in which knowledge is transmitted, and skills are developed. It also helps individuals stay informed about current events in politics, healthcare, and other societal spheres.

Conclusion

The integration of digital resources in TVET curriculum can greatly enhance skills development by offering dynamic and interactive learning experiences. However, effective implementation depends on factors such as adequate infrastructure, digital literacy among educators and students, and well-designed digital content. There is often a disparity in the quality and accessibility of these resources across institutions, which can exacerbate educational inequalities. TVET programs must also be adaptable to rapidly changing digital technologies. Overall, strategic integration of digital resources can transform learning experiences, but it requires addressing infrastructural gaps, improving digital competencies, and ensuring equitable access to high-quality materials.

Recommendations

The following recommendations were highlighted:

1. TVET curriculum planners should analyze existing course outlines and learning objectives to pinpoint areas where digital resources can significantly enhance student skill development.
2. TVET institutions must prioritize ensuring the identified digital resources are accessible to all students and align with the institution's budgetary constraints.
3. TVET institutions should actively explore online databases, educational technology platforms, and open educational resources (OERs) to discover relevant digital tools, simulations, and learning materials that support skill development.
4. TVET institutions should conduct a comprehensive needs assessment by surveying instructors, students, and industry professionals to identify the specific skills students need to develop.

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