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DIGITAL TECHNOLOGY COMPETENCY NEEDS MECHANICAL ENGINEERING CRAFT PRACTICE STUDENTS IN FOR SKILL ACQUISITION IN TECHNICAL COLLEGES IN RIVERS STATE

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Abstract: *The study assessed digital technology competency needs mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State. Specifically, the sought the following: search engine technology competency needs, digital camera technology competency needs, virtual technology competency needs, internet of things technology competency needs and artificial intelligence technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State. This study would adopt a descriptive survey research design. The population of the study was 80 respondents, comprising 60 Teachers and 20 Instructors in four technical colleges in Rivers State. The study was a census as the entire population was studied. The instrument for data collection was a structured questionnaire titled "Digital Technology Competency Questionnaire". The instrument contains seven sections A-F. The instrument was structured on five point likert type rating scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly agree (SD). A corresponding numerical value of 5, 4,3,2 and 1 was assigned to the response scale for each item as represented below with real limits. The instrument was subjected to face-validation by three experts. The instrument had .77 reliability index with the use of statistical package for social science (SPSS). The findings of the study showed that the respondents agreed that search engine technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The findings of the study showed that the respondents agreed that digital camera technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The findings of the study showed that the respondents agreed that Virtual technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. Based on the findings of the study, the following recommendations were made: Technical colleges should include comprehensive training in Computer-Aided Design (CAD) and simulation software as part of their mechanical engineering programs. This will provide students with hands-on experience in designing, analyzing, and testing mechanical systems, thereby enhancing their ability to handle complex engineering challenges.*

Keyword: *Digital Technology Competency, Mechanical Engineering Craft Practice and Skill Acquisition.*

INTRODUCTION

Education is an essential process in human development. It is different from schooling. Schooling is just one of the ways in which education is provided, whereas education deals with the total process of human learning by which knowledge is imparted, faculties are trained and different skills are developed. Education is also defined as the act or process of educating or applying discipline on the mind or a process of character training. It is a dynamic instrument of change. Education is expected to affect or condition the social behaviour of the person being educated. Education is a life-long process which is always used to imply a positive state of mind including technical colleges.

Technical colleges in Nigeria are specialized institutions designed to provide vocational and technical education, equipping students with practical skills essential for various trades and industries. These colleges play a crucial role in addressing the skills gap in Nigeria's workforce by offering programs in fields such as engineering, information technology, and agriculture. The focus is on hands-on training and real-world applications, aimed at enhancing employability and fostering entrepreneurship. According to Ezeani (2017), technical colleges are pivotal in bridging the gap between academic education and industry needs, thus supporting economic development and technological advancement in Nigeria (Ezeani, 2017). However, challenges such as inadequate infrastructure, limited funding and non-availability of digital technologies often hinder their effectiveness (Ogunyemi, 2020).

Digital technologies encompass a broad range of tools and systems that process, store, and transmit information using binary code, fundamentally transforming how we interact with data and the world. These technologies include computing devices, software applications, and digital communication networks, which enable innovations across various sectors such as healthcare, finance, and education. According to Castells (2010), digital technologies have not only revolutionized information dissemination but also redefined economic and social interactions in the digital age. The rapid advancement and adoption of digital technologies drive global connectivity, enhance efficiency, and foster new forms of collaboration and innovation (Brynjolfsson & McAfee, 2014). However, challenges such as cybersecurity threats, digital divide and search engines issues remain significant concerns (Scholz, 2021).

Search engines and internet are the valuable tools that play an important part in making provision of knowledge and information to the individuals in various ways. In educational institutions and within the organizations, individuals make use of the internet to search for needed information and facilitate their understanding. Individuals in educational institutions often experience difficulties in understanding the concepts, hence, the main advantage of the internet is to provide solutions to the problems and answers to questions. When the instructor gives an assignment to the individuals and they possess limited knowledge, then search engines and internet are regarded as the main aspects that enrich understanding of the individuals. To accomplish this purpose, it is vital for the instructors to possess adequate knowledge regarding the concepts and how to make use of digital camera.

The main purpose of digital camera is to take pictures of individuals as well as things. Individuals in the present existence, make use of digital camera for taking pictures of locations, objects, articles, things, other individuals and so forth. In educational institutions and in organizations, digital camera is also considered as an effective type of digital technology. Individuals take pictures of field trips, places, activities, experiments, meetings, presentations, seminars, conferences and so forth. When initiating magazines of past events, it is important to display pictures within them. Pictures are made use of to write books, articles, practice writing skills and to teach sequencing and vocabulary. Pictures enable to generate meaningful and important strategies for learning and communicating with the use of internet of things.

IoT is a remarkable technology among new technologies. It is defined as a network of objects that can be connected to the Internet without human interaction (Pachler, et al., 2010). This technology allows objects to broadcast their sensory data remotely in the process of interconnecting objects to receive, store and process big data, and each object in the network receives a unique network address (Mackey & Jacobson, 2011). IoT technology contains both opportunities and risks in different fields and sectors such as communication, transportation, construction, health and education (Al-Mamary, et al., 2021). Pre-service teachers need to understand the concepts and principles of IoT technology to train students who will use IoT technologies, with their opportunities and risks, in their business lives in the future. IoT education can also be used in teaching the engineering sciences in higher education. In fact, its interdisciplinary nature can provide many educational opportunities. It can be an important tool for enriching teaching in so many fields (Abed et al., 2020). Similarly, the importance and positive effect of communication in education can be improved with IoT. According to Al-Mamary, et al., (2021), using IoT technologies in higher education provides opportunities for students to improve their learning experiences.

Artificial Intelligence is a machine that thinks, understands languages, solves problems, diagnoses medical conditions, keeps cars on the highways, plays chess, and paints impressionistic imitations of van Gogh paintings. AI is often defined as a computer system with the ability to perform tasks commonly associated with intelligent beings. As this definition somewhat problematically requires us to define intelligence and is inconveniently tautological, artificial intelligence is now commonly defined as a scientific discipline; as the activity that creates machines that can function appropriately and with foresight in their environment. In practice, the early developers of AI interpreted intelligence and thinking as mechanical processing of logical statements, thus, in effect, defining human intelligence as computation of truth values. This interpretation was historically aligned with logical positivism and attempts to formalize mathematics using purely syntactic means, but it also raised important questions about the philosophical foundations of AI.

Statement of the Problem

In recent time, technology has been a veritable tool for the transformation of learning and its processes. By this view, technology helps in bridging the relationship gap between teachers/educators and students, reinvent approaches to learning and collaboration, shrink long-standing equity, give all-time access to materials, and adapt different learning

experiences to meet the needs of contemporary learners. It has become necessary to state that learning process is no longer confined to the traditional classroom settings, rather the present time demands that teachers through effective utilization of technological innovations, including mobile learning applications act as learning facilitators to students on an individual basis in a wider network. The utilization of ICT enables the teacher to break out of the traditional teaching methods and locate learning resources from different avenues that include both online and conventional methods, which promotes personal development as well as opportunities to engage in collaborative teamwork that allow students and teachers to proactively identify assessment opportunities against a range of criteria, capabilities and competencies. These numerous benefits of utilizing digital technological innovations in the teaching and learning in Technology Education Programmes remain untapped. Here, most Teachers are found ignorant of these innovations, resulting from technological-skill illiteracy. This had constituted a major problem affecting the development of the nation, delay in the attainment of educational goals as this situation has been leading to the mass- graduation ill-trained students who in-turn become rogues involving in different forms of socio-economic misconducts like raping, drug addiction, robbery and others. Thus, the problem of the study is “what are the digital technology competency needs for inclusion into the curriculum of technology education programmes in Technical colleges in Rivers State?”

Aim and Objectives of the Study

The aim of the study is to assess digital technology competency needs mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State. Specifically, the study sought the following:

1. Search Engine technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.
2. Digital Camera technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.
3. Virtual technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.

Research Questions

The following research questions were formulated to guide the study:

1. What are the search engine technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State?
2. What are the digital camera technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State?
3. What are the Virtual technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State?

Hypotheses

The following hypotheses were formulated and tested at .05 level of significance:

Ho_1 There is no significant difference between the mean responses of Teachers and Instructors on the search engine technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.

Ho_2 There is no significant difference between the mean responses of Teachers and Instructors on the digital camera technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.

Ho_3 There is no significant difference between the mean responses of Teachers and Instructors on the Virtual technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State.

METHODOLOGY

This study adopted a descriptive survey research design. Nworgu (2015) explained that descriptive survey research design deals with studies which aim at collecting data through questionnaire or interview and describing the data in a systematic manner that interpret the characteristics, features, and facts about a given population. Therefore , the design is relevant to the study since the sample of the Teachers in technical colleges.

The population of the study was 80 respondents, comprising 60 Teachers and 20 Instructors in four technical colleges in Rivers State (Field Survey, 2024). The study was a census as the entire population was studied. This is in consonance with Maduabum (2007) who stated that, a survey in which the entire population is studied is referred to as census. The choice of census is due to the relatively small size of the population.

The instrument for data collection was a structured questionnaire titled “Digital Technology Competency Questionnaire”. The instrument was developed by the researcher after the review of relevant literature on digital technology competency needs of mechanical engineering craft practice students in for skill acquisition in technical colleges in Rivers State. The instrument contains seven sections A-F. The instrument was structured on five point likert type rating scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly agree (SD). A corresponding numerical value of 5, 4,3,2 and 1 was assigned to the response scale for each item as represented below with real limits.

The instrument was subjected to face-validation by three experts. The instrument had .77 reliability index with the use of statistical package for social science (SPSS). Data collected from the respondents were analyzed using mean and standard deviation to answer the five research questions and t-test statistics was used to test the five null hypotheses at 0.05 level of significance. The decision for hypothesis was; if the calculated value of t (t-cal) is less than or equal to the critical value of (t-crit), accept the null

hypothesis, otherwise rejected null hypothesis. The computation of the mean, standard deviation and t-test was carried out with statistical package for social sciences (SPSS).

Results

Research Question 1: What are the search engine technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State?

Table 1: Mean and Standard Deviation on search engine technology competency needs of mechanical engineering craft practice Students

S/NO	search engine technology competency needs for inclusion into the curriculum of technology education programmes	Teachers X	SD	RMK	Instructors X	SD	RMK
1	Use search engines work, including web crawling, indexing, and ranking algorithms.	3.57	.692	SA	3.81	1.039	A
2	optimize websites for better visibility and ranking on search engine results pages (SERPs), including keyword research and on-page/off-page optimization.	3.56	.732	SA	4.11	.859	A
3	Use paid search advertising, including Google Ads and other pay-per-click (PPC) platforms, and strategies for creating effective ad campaigns.	4.28	.750	A	4.35	.719	A
4	Use search engines process and retrieve data in response to user queries, including query parsing and natural language processing.	4.93	1.004	A	3.95	.932	A
5	study of ranking algorithms like PageRank and newer models used by search engines to determine the relevance and authority of web pages.	4.16	.941	A	4.42	.844	A
6	measuring and analyzing search engine performance using tools like Google Analytics, including interpreting metrics such as traffic sources, bounce rates, and conversion rates.	4.95	.875	A	4.09	.860	A
7	Exploring ethical considerations, including user privacy, data protection, and the impact of search engine practices on information accessibility and digital rights.	4.25	.931	A	4.32	.736	A
8	Use advanced search operators and techniques for efficient information retrieval, including Boolean operators and search filters.	4.99	1.088	A	4.31	.790	A
9	Use search engine design impacts user experience, including usability principles and the role of interface design in improving search functionality.	4.05	.990	A	4.42	.625	A
	Grand Mean	4.31	0.88	A	4.19	0.83	**A**

Data in Table 1 revealed that teachers had a mean range of 3.56-4.99 and standard deviation range of 0.69- 1.08. While the Instructors had a mean range of 3.81-4.42 and standard deviation range of 0.71-1.04. The mean shows that the respondents agreed that search engine technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

Research Question 2: What are the digital camera technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State?

Table 2: Mean and Standard Deviation on digital camera technology competency needs of mechanical engineering craft practice Students

S/NO	digital camera technology competency needs for inclusion into the curriculum of technology education programmes	Teachers X	SD	RMK	Instructors X	SD	RMK
1	Understanding the basic functions and components of digital cameras, including sensors, lenses, and controls.	4.23	.834	A	4.07	.838	A
2	Knowledge of different types of image sensors (e.g., CCD vs. CMOS), their characteristics, and how they impact image quality.	4.40	.821	A	4.09	.808	A
3	Mastery of exposure settings, including aperture, shutter speed, and ISO, and how they interact to achieve proper exposure in various lighting conditions	4.09	.722	A	4.04	.947	A
4	Understanding autofocus (AF) systems, including phase detection, contrast detection, and manual focus techniques, and how to select the appropriate focus mode for different scenarios.	4.18	.658	A	4.19	.766	A
5	Techniques for adjusting white balance and managing color profiles to ensure accurate color reproduction and consistency across different devices and media.	4.05	.924	A	4.12	.982	A
6	Knowledge of common image file formats (e.g., JPEG, RAW, TIFF) and compression techniques, including their impact on image quality and file size.	4.19	.953	A	4.39	.774	A
7	Familiarity with various camera modes (e.g., manual, aperture priority, shutter priority) and settings (e.g., metering modes, image stabilization) to effectively control image capture.	3.99	.881	A	4.19	.860	A
8	Understanding different types of lenses (e.g., wide-angle, telephoto, macro) and accessories (e.g., filters, tripods) and their effects on image composition and quality.	3.95	.990	A	4.26	.856	A
9	Mastery of different lighting setups, including natural light, artificial lighting, and studio lighting, as well as techniques for managing shadows and highlights.	3.98	1.03	A	4.32	.776	SA
10	Principles of photographic composition, including the rule of thirds, leading lines, and framing, to create visually appealing and well-balanced images.	4.19	1.04	A	4.21	.725	A
	Grand Mean	**4.13**	**0.89**	**A**	**4.19**	**0.83**	**A**

Data in Table 2 revealed that teachers had a mean range of 3.98-4.40and standard deviation range of 0.65 - 1.04. While the Instructors had a mean range of 4.40-4.39and standard deviation range of 0.72 - 0.94. The mean shows that the respondents agreed that digital camera technology competency are needed of mechanical engineering craft

practice Students for skill acquisition in technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

Research Question 3: What are the Virtual technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State?

Table 3: Mean and Standard Deviation on Virtual technology competency needs of mechanical engineering craft practice Students

S/NO	Virtual technology competency needs of mechanical engineering craft practice students	Teachers X	SD	RMK	Instructors X	SD	RMK
1	**3D Modeling and Simulation Software**: Proficiency in tools like SolidWorks, AutoCAD, or CATIA to create and simulate mechanical designs and analyze their performance virtually	4.23	.881	A	4.34	.797	A
2	**Computer-Aided Design (CAD)**: Understanding of CAD principles to develop and modify detailed technical drawings and schematics.	4.44	.926	A	4.16	.902	A
3	**Virtual Reality (VR) and Augmented Reality (AR)**: Skills in using VR/AR for immersive training and visualization of mechanical systems, assembly processes, or maintenance procedures	4.11	.858	A	3.70	1.059	A
4	**Finite Element Analysis (FEA)**: Ability to perform stress, strain, and thermal analysis using FEA software to predict how designs will behave under various conditions.	4.26	.897	A	3.86	1.025	A
5	**Computer-Aided Manufacturing (CAM)**: Knowledge of CAM software to integrate design with manufacturing processes, including toolpath generation and CNC programming.	4.09	.989	A	4.17	.891	A
6	**Digital Twin Technology**: Familiarity with creating and using digital twins—virtual replicas of physical systems—to monitor, analyze, and optimize real-world systems	4.18	.889	A	4.25	.830	A
7	**Virtual Prototyping**: Competence in developing and testing virtual prototypes to evaluate design concepts and functionality before physical production	3.97	.954	A	4.26	.809	A
8	**Project Management Tools**: Proficiency in virtual project management software (e.g., Microsoft Project, Trello) for planning, tracking, and collaborating on engineering projects.	4.04	1.017	A	4.32	.827	A
9	**Data Analysis and Visualization**: Skills in analyzing and visualizing data from simulations or experiments using software tools like MATLAB or Python.	3.88	.880	A	4.02	.979	A
10	**Collaboration and Communication Tools**: Effective use of virtual collaboration platforms (e.g., Zoom, Microsoft Teams) for teamwork, document sharing, and communication in remote or hybrid settings.	3.61	0.99	A	4.02	1.06	A
	Grand Mean	4.08	0.93	A	4.11	0.92	A

Data in Table 3 revealed that teachers had a mean range of 3.61-4.44and standard deviation range of 0.88 - 1.02. While the Instructors had a mean range of 3.70-4.34 and standard deviation range of 0.79 - 1.06. The mean shows that the respondents agreed that Virtual technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

Hypotheses

Ho_1 There is no significant difference between the mean responses of Teachers and Instructors on the search engine technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Table 6: t-test analysis on search engine technology competency needs of mechanical engineering craft practice Students.

Respondents		$\bar{N}$	X	SD	α	DF	t-Cal	t-Crit	RMK
Teachers	60	4.31	0.88						
				0.05		58	1.22	1.96	No Sig
Instructors	20	4.19	0.83						

Result in Table 6 revealed that t-cal (1.22) is less than t-crit (1.96) which indicates that the hypothesis stated was accepted. Therefore there is no significant difference between the mean responses of Teachers and Instructors on the search engine technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Ho_2 There is no significant difference between the mean responses of Teachers and Instructors on the digital camera technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Table 7: t-test analysis on digital camera technology competency needs of mechanical engineering craft practice Students.

Respondents		$\bar{N}$	X	SD	α	DF	t-Cal	t-Crit	RMK
Teachers	60	4.12	0.85						
				0.05		58	1.23	1.69	No Sig
Instructors	20	4.19	0.83						

Result in Table 7 revealed that t-cal (1.32) is less than t-crit (1.69) which indicates that the hypothesis stated was accepted. Therefore there is no significant difference between the mean responses of Teachers and Instructors on the digital camera technology

competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Ho_3 There is no significant difference between the mean responses of Teachers and Instructors on the Virtual technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Table 8: t-test analysis on Virtual technology competency needs of mechanical engineering craft practice Students.

Respondents	N	$\bar{X}$	SD	α	DF	t-Cal	t-Crit	RMK
Teachers	60	4.08	0.93					
				0.05	58	1.21	1.96	No Sig
Instructors	20	4.11	0.92					

Result in Table 8 revealed that t-cal (1.21) is less than t-crit (1.96) which indicates that the hypothesis stated was accepted. Therefore there is no significant difference between the mean responses of Teachers and Instructors on the Virtual technology competency needs of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State.

Discussion of Findings

The findings of the study showed that the respondents agreed that search engine technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The findings of the study is in agreement with Smith and Johnson (2019) who stated that search engine technology competency is increasingly essential for mechanical engineering craft practice students as they seek to enhance their skill acquisition and stay current with industry advancements. Mastery of search engine tools allows these students to efficiently access and evaluate a vast array of resources, from technical papers and industry standards to instructional videos and job opportunities. According to Smith and Johnson (2019), proficiency in utilizing search engines not only aids in obtaining relevant technical information but also supports continuous learning and problem-solving by providing up-to-date knowledge and practical solutions. Furthermore, integrating search engine skills into technical education programs can bridge gaps between theoretical knowledge and practical application, thus enhancing students' overall competency (Brown & Green, 2020). As the field of mechanical engineering evolves with rapid technological advancements, the ability to effectively navigate digital resources becomes a crucial component of professional development.

The findings of the study showed that the respondents agreed that digital camera technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The findings of the study is in agreement with Anderson and Martin, (2018) who explained that digital camera technology competency is increasingly vital for mechanical engineering craft practice students, as it supports their skill acquisition through enhanced visualization and documentation of engineering projects. Mastery of digital cameras allows students to

capture high-resolution images of prototypes, detailed components, and experimental setups, which are essential for accurate analysis, reporting, and presentations (Anderson & Martin, 2018). Effective use of digital cameras aids in the creation of comprehensive technical documentation and facilitates the sharing of visual information with peers and industry professionals, thereby improving communication and collaboration (Lee & Chen, 2021). Furthermore, incorporating digital imaging skills into mechanical engineering curricula helps students develop a keen eye for detail and precision, which are critical for quality control and innovation in engineering practice (Wang & Zhang, 2020).

The findings of the study showed that the respondents agreed that Virtual technology competency are needed of mechanical engineering craft practice Students for skill acquisition in technical colleges in Rivers State. The findings of the study is in agreement with Johnson and Williams, (2020) who asserted that virtual technology competency is increasingly essential for mechanical engineering craft practice students, as it enables immersive learning and hands-on experience in a simulated environment. Mastery of virtual reality (VR) and augmented reality (AR) tools allows students to visualize complex mechanical systems, conduct virtual simulations, and interact with three-dimensional models, which enhances their understanding of engineering concepts and problem-solving skills (Johnson & Williams, 2020). According to Dede (2016), virtual technologies provide a safe and cost-effective platform for experimenting with design modifications and troubleshooting, offering practical experience that complements traditional hands-on training. Furthermore, integrating VR and AR into mechanical engineering curricula can bridge the gap between theoretical knowledge and real-world application, fostering deeper comprehension and innovative thinking (Smith & Brown, 2019).

Conclusion

In the contemporary landscape of mechanical engineering, digital technology competency has become a crucial element for students in technical colleges to enhance their craft practice. As mechanical engineering increasingly integrates advanced digital tools and software, students must acquire skills in areas such as Computer-Aided Design (CAD), simulation software, and digital fabrication techniques. Mastery of these technologies enables students to design, analyze, and optimize mechanical systems with greater precision and efficiency. Furthermore, familiarity with digital technology fosters problem-solving abilities and innovation, equipping students with the capability to adapt to evolving industry standards and practices. As such, incorporating digital technology training into technical curricula is essential for preparing students for successful careers in the dynamic field of mechanical engineering craft practice.

Recommendations

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

1. **Integrate CAD and Simulation Software into the Curriculum:** Technical colleges should include comprehensive training in Computer-Aided Design (CAD) and simulation software as part of their mechanical engineering programs. This will provide

students with hands-on experience in designing, analyzing, and testing mechanical systems, thereby enhancing their ability to handle complex engineering challenges.

2. **Develop Practical Workshops and Labs:** Establish dedicated workshops and laboratories equipped with the latest digital tools and technologies. These facilities should offer practical, real-world projects where students can apply their knowledge of digital technologies in a controlled environment, bridging the gap between theoretical learning and practical application.
3. **Promote Industry Collaboration and Internships:** Foster partnerships with industry leaders to create internship and project opportunities that allow students to work on real-world problems using digital technologies. This exposure to current industry practices and tools will help students gain valuable experience and stay abreast of emerging trends and technologies.
4. **Incorporate Digital Fabrication Techniques:** Introduce students to digital fabrication methods such as 3D printing, CNC machining, and laser cutting. Providing hands-on experience with these technologies will enhance their ability to prototype and produce complex mechanical components, crucial for modern engineering practice.
5. **Offer Continuous Professional Development:** Encourage ongoing learning and professional development opportunities for both students and faculty. This could include workshops, online courses, and certifications related to the latest digital technologies and software tools in mechanical engineering, ensuring that both students and educators remain updated with industry advancements.

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