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Research Article

Technology-Based Education and Workforce Readiness: Examining Employment, Skills Acquisition, Industry Alignment, Training Relevance, and Digital Learning Infrastructure

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ABSTRACT

Technology-Based Education (TBE) has emerged as an important strategy for cultivating a skilled workforce that may facilitate regional industrialization and economic advancement. This study investigated the functions of Technology-Based Education within State Universities and Colleges (SUCs) in the Zamboanga Peninsula, focusing on employment, skills development, job alignment, pertinent training, and advanced facilities and equipment. A descriptive-quantitative research approach was utilized, engaging 316 participants, comprising 99 faculty members from four state universities and colleges offering technology-based education programs and 217 representatives from chosen canning, fishing, and service businesses. Total enumeration was employed to determine the respondents. Data were gathered utilizing a researcher-created, expert-validated survey questionnaire and analyzed via weighted mean using the Statistical Package for the Social Sciences (SPSS). The results indicated that Technology-Based Education significantly enhances graduate employability and facilitates regional industrialization. The study concludes that Technology-Based Education substantially enhances the production of industry-ready graduates possessing the competencies demanded by employers and fosters the industrial growth of the Zamboanga Peninsula. Enhancing collaborations between higher education institutions and industry, constantly revising curricula, augmenting faculty expertise, and investing in contemporary instructional facilities are advised to elevate graduate employability and maintain regional industrial competitiveness.

Keywords: Technology-Based Education, graduate employability, job alignment, skills acquisition, higher education, industrialization, State Universities and Colleges, Zamboanga Peninsula

INTRODUCTION

Universities and colleges are expected to impart marketable skills that prepare students for the dynamic world of work. To date, students continue to graduate and employers continue to hire new talent, and this has been the norm for centuries now. The impact of technology-driven automation, the intricacies of job process, and the fragmentation of decision-making of the current workplace environment collectively result in the increasing skills demand across business sectors and industries (Wicht et al., 2019). Hence, Technology-Based Education (TBE) among State Universities and Colleges (SUCs) must define its roles in terms of employment, skills acquisition, job alignment, relevant trainings, and the state of the art facilities and equipment so that students will obtain quality education ready to enter the world of work.

High education landscape is rapidly changing. The arena is being hit from all sides by social, curriculum, technological, and financial changes. Institutions that want to maintain a leg up on competitors and align better with their goal to produce “marketable” future employees should be prepared to adapt to these trends. Therefore, higher education institutions must assess their performances in terms of their leadership, information and analysis, strategy policy and planning, faculty, the quality of product and services, organizational performance, and customer focus to meet the demand in workforce and workplace.

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There would be more opportunities for greater economic growth, particularly in trade, investments and tourism in the region due to its strategic location and physical endowments. Trade and Investment in Zamboanga Peninsula is the country's major producer of canned and bottled sardines, as well as, rubber, mango, seaweeds, banana and coconut. The abundance of tuna, sardines, banana, coconut, fruits and poultry and livestock products in Mindanao is attributed partly to its advantage as bird flu and FMD- free island in the country, as well as, in the BIMP-EAGA.

With the job opportunities and investment in Zamboanga, the proponent investigated the evaluation of technology educators regarding the roles of Technology-Based Education (TBE) among State Universities and Colleges (SUCs) in Zamboanga peninsula in terms of employment of graduates; skills acquisition; job alignment; relevant trainings; and state of the art facilities and equipment. Looked as well their performances utilizing the seven Malcolm Baldrige criteria/categories in measuring quality for industrial development in terms of leadership, Information and analysis, strategy, policy and planning, faculty, quality of product and service, organizational performance, and customer focus. The result is beneficial to the CHED curriculum developers, school administrators, instructors and professors, students, researchers, industry managers, supervisors and employees.

RESEARCH QUESTION

What are the roles of the technology-based education in terms of: Employment, skills acquisition, job alignment, relevant trainings and state of the art facilities and equipment?

RELATED LITERATURE AND STUDIES

Roles of the Technology-Based Education in terms of Employment

Peeters et al. (2019) explained that higher education institutions (HEIs) are increasingly challenged to produce employable graduates who can contribute to sustainable economic growth and national development. In today's globally competitive knowledge economy, where rapid technological advancement and continuous change have become the norm, employability has emerged as a major concern among policymakers, educators, and researchers. Consequently, the development of graduates who possess relevant knowledge, competencies, and workplace skills has become one of the primary objectives of higher education.

Similarly, Kumar (2007) emphasized that higher education institutions must prepare students for occupations that do not yet exist, equip them to utilize technologies that have not yet been invented, and enable them to solve problems that have not yet emerged. This perspective highlights the need for educational institutions to develop graduates who are adaptable, innovative, and capable of responding to the continuously evolving demands of the labor market.

Akkermans et al. (2013) further argued that employability extends beyond obtaining initial employment. Once graduates enter the workforce, they must continuously develop their competencies and professional capabilities to maintain employment and remain competitive throughout their careers. Consequently, economic, political, and social pressures have compelled policymakers and higher education leaders to prioritize employability as a strategic agenda in higher education.

Following the global economic recession of 2008, employability became a central concern in higher education, particularly because of reductions in public funding and the increasing challenges graduates faced in securing meaningful employment within an increasingly competitive labor market (Mellors-Bourne, 2017). These developments reinforced the need for higher education institutions to produce graduates equipped with competencies that meet contemporary labor market requirements.

According to Forrier et al. (2015), employability has been conceptualized and defined in numerous ways across different academic disciplines. Because researchers approach the concept from varying theoretical perspectives, employability has often been criticized as being broad, ambiguous, and lacking conceptual clarity. Consequently, several scholars have emphasized the need to establish a more unified definition and to integrate existing conceptual frameworks in order to enhance the understanding of employability as an academic construct (Peeters et al., 2019).Cleary and Van Noy (2014) observed that the global recession and other socioeconomic developments

intensified concerns among policymakers and the general public regarding the role of higher education in preparing graduates for employment. These concerns have generated renewed pressure on higher education institutions to implement job-driven educational strategies. However, the alignment of higher education with labor market demands is far more complex than merely matching academic programs with employment opportunities. Effective labor market alignment requires collaboration among multiple stakeholders, including educational institutions, employers, government agencies, and industry partners. Moreover, empirical evidence remains limited regarding the effectiveness of job-driven educational strategies and the most appropriate approaches for achieving meaningful higher education–labor market alignment.

Higher education institutions play a fundamental role in delivering quality education that prepares students for productive and meaningful careers. Student outcomes, particularly the development of knowledge, skills, competencies, and professional values, remain central concerns of every educational institution. Graduate employability largely depends on how effectively these intended learning outcomes are achieved. Consequently, curriculum design, instructional delivery, and program implementation significantly influence students' preparedness for employment after graduation (Terano, 2019).

In both domestic and international labor markets, competition for employment has become increasingly intense. As parents and prospective students select colleges and universities, graduate employability has become one of the most important considerations in choosing an educational institution. Consequently, employability has become a critical factor in curriculum development, admissions policies, faculty recruitment, and student retention initiatives. Higher education institutions must continuously monitor the employment outcomes of their graduates to evaluate institutional accountability and determine whether their academic programs effectively contribute to the development of individuals, institutions, and society. As emphasized by Peeters et al. (2019), in a globally competitive knowledge economy characterized by continuous change, employability remains one of the foremost concerns of both policymakers and scholars.

Ashenafi Abate Woya (2019) stated that universities are mandated to provide professional and technical education while offering advanced and specialized instruction in literature, philosophy, science, and the arts. In addition, higher education institutions are expected to promote scientific and technological research while fulfilling the constitutional mandate that guarantees every citizen's right to quality education.

Graduate tracer studies (GTS) have become valuable tools for higher education institutions because they provide evidence regarding graduates' employment outcomes and the relevance of academic programs. According to Cañizares (2015), tracer studies enable institutions to respond effectively to societal changes and labor market demands through continuous curriculum evaluation and improvement. Findings from tracer studies serve as important inputs for institutional planning, quality assurance, curriculum enhancement, and policy formulation, thereby ensuring that academic programs remain responsive to the evolving needs of employers and society.

Roles of Technology-Based Education in Terms of Job Alignment

According to Juran's Quality Handbook (2017), quality has multiple meanings, one of which refers to the performance of products or services through features that satisfy customers and encourage continued patronage. In the context of Technology-Based Education (TBE), quality signifies the provision of relevant and effective education that equips students with the competencies, knowledge, and technical skills required by industries and employers. Consequently, TBE aims not only to provide quality instruction but also to produce competent graduates who are prepared for gainful employment.

Juran's Quality Handbook (2017) further outlined several fundamental principles of quality management that are highly applicable to technology-based education. First, organizations should strive to "do the right things right the first time, on time, all the time." This principle emphasizes that TBE administrators must identify the critical institutional functions that contribute most significantly to educational quality and institutional effectiveness. Second, failure to perform essential processes efficiently results in quality costs and unnecessary waste. Inefficient institutional processes consume valuable resources and may account for approximately 15% to 35% of organizational expenditures where quality management practices are inadequately implemented.Third, quality is

ultimately defined by the customer. Therefore, educational institutions must consistently strive to satisfy, exceed, and even anticipate the expectations of both internal and external stakeholders. Internal customers include faculty members, staff, and administrators who rely on institutional support services, while external customers include students, employers, industries, and society. Fourth, quality encompasses every aspect of an organization, including quality personnel, quality instructional processes, quality educational services, and a quality-driven organizational culture.

Moreover, approximately 80% of quality-related problems originate from ineffective policies, organizational structures, and management systems rather than from employees' individual mistakes. Consequently, institutional leaders bear primary responsibility for establishing policies and systems that promote continuous quality improvement. Furthermore, all members of the organization should be empowered to participate in problem identification, quality improvement initiatives, and decision-making processes. Such participation requires continuous training in quality management tools and techniques. Finally, institutions should embrace the philosophy of Kaizen**,** which advocates continuous and incremental improvement as an ongoing organizational commitment.

Caraig (2018) emphasized that universities play a vital role in conducting industry mapping to ensure that graduates' knowledge, skills, and competencies are aligned with the current requirements of companies and business establishments. Industry mapping enables institutions to identify emerging workforce needs and provides evidence for curriculum enhancement. Accordingly, Caraig recommended that universities continuously maintain and sustain competency standards for every specialization as part of their performance evaluation system to ensure that graduates possess the competencies expected by employers.

Similarly, Laguador and Ramos (2014) highlighted the importance of involving industry partners in curriculum development and revision. Industry representatives provide valuable insights regarding current workplace expectations and competency requirements, enabling higher education institutions to develop curricula that produce graduates equipped with relevant knowledge, practical skills, and professional values. Such collaborative curriculum development should be anchored on Bloom's Taxonomy Learning Domains to ensure that learning outcomes address cognitive, affective, and psychomotor competencies.

The role of higher education in preparing graduates for employment has become an increasing concern among policymakers and the general public. Gallup (2014) reported that most Americans consider a college education essential for obtaining quality employment. Likewise, the wage premium associated with earning a college degree has continued to increase over recent decades (Autor, 2014). Nevertheless, numerous reports have also documented the difficulties encountered by recent graduates in securing well-paying jobs that appropriately utilize their educational qualifications (Arum & Roksa, 2014).

These concerns have been reinforced by evidence indicating that, despite the increasing value of higher education, many graduates continue to experience employment challenges. Studies by the Pew Research Center (2014), Baum et al. (2013), and Autor (2014) confirmed the economic advantages associated with college education, while Arum and Roksa (2014) emphasized that graduates frequently encounter underemployment and job mismatch. Such concerns are further intensified by the rising costs of higher education and increasing levels of student debt (Fry, 2014; Lee, 2013).

Employer reports likewise reveal persistent difficulties in recruiting graduates with the necessary workplace competencies, suggesting possible shortages of appropriately skilled workers in certain industries (Beaudry et al., 2013; Holzer, 2013; Rich, 2010; Salzman, 2013; Sherrill, 2013; Weaver & Osterman, 2013). Consequently, recent national policy initiatives have emphasized strengthening the connection between higher education and labor market demands.

Vice President Biden (2014) stressed the importance of ensuring that educational systems become more job-driven to establish stronger alignment between graduate competencies and employer requirements. Similarly, the Workforce Innovation and Opportunity Act (2014) highlighted the significance of strengthening partnerships between educational institutions and employers. These policy initiatives, together with recommendations from the

National Governors Association (2013) and the United States Department of Labor (2014), demonstrate the growing national commitment to improving labor market alignment within higher education.

Despite these initiatives, there remains limited consensus regarding the appropriate role of higher education in workforce preparation. This uncertainty may be attributed to significant changes in employment practices and evolving stakeholder expectations. Cappelli (2012) observed that employers increasingly expect educational institutions to develop graduates who already possess work-readiness competencies, while simultaneously reducing investments in entry-level employee training. Likewise, students, parents, and other stakeholders increasingly expect that obtaining a college degree will lead directly to meaningful and well-compensated employment (Mourshed et al., 2012; Pew Research Center, 2014). These evolving expectations have shifted the traditional responsibilities of higher education institutions and intensified demands for stronger labor market alignment (Cappelli, 2014). However, policymakers often underestimate the complexity of aligning educational programs with labor market requirements, assuming that graduate employment follows a straightforward input-output process.

Graduate employability is often constrained by the mismatch between educational qualifications and labor market demands. Adeyemo et al. (2010) argued that graduates frequently experience difficulty securing employment related to their academic qualifications because of inadequate mastery of workplace competencies and insufficient alignment between academic curricula and employer expectations. This situation suggests that universities have not fully prepared graduates to meet the challenges of the modern global labor market. Accordingly, Hiim (2017) emphasized that curriculum relevance requires authentic practical experiences integrated with classroom instruction, enabling students to apply theoretical knowledge within real workplace settings.

De Gruyter (2016) examined the potential contribution of higher education institutions in reducing labor market mismatch among newly graduated employees. The findings revealed that increasing the practical components of academic programs, regardless of discipline, substantially reduces the incidence of graduate mismatch. Specifically, work placements with opportunities for permanent employment and institutional job placement assistance significantly improve graduate employment outcomes. Conversely, reliance on private employment agencies was associated with a greater likelihood of employment mismatch.

The study further concluded that labor market mismatch often persists despite high levels of labor mobility. Consequently, identifying institutional factors that influence graduates' initial employment provides opportunities to reduce both the occurrence and long-term consequences of mismatch. These findings highlight the important role of higher education institutions as policy instruments for addressing graduate employment mismatch.

Moreover, work-integrated learning experiences and university-supported job placement services substantially reduce graduate overeducation and employment mismatch. By strengthening partnerships with employers and investing in comprehensive career support services, higher education institutions can facilitate more effective matching between graduates and available employment opportunities. Such initiatives reduce information asymmetries between employers and job seekers, thereby improving employment outcomes.

Higher education institutions also play a significant role in educating students about effective job-search strategies. Evidence suggests that dependence on private employment agencies increases the likelihood of graduate mismatch because these agencies often prioritize job placement over the quality of employment matches. Therefore, universities should provide systematic career guidance and employment preparation programs that enable graduates to secure positions aligned with their educational qualifications and career aspirations. Future research should continue examining the relationship between job-search strategies, initial employment experiences, and long-term career outcomes to support evidence-based career development interventions.

Finally, with respect to curriculum composition, the study demonstrated that incorporating work-integrated learning components—including internships, work placements, project-based learning, problem-based learning, practical knowledge acquisition, and research projects—significantly reduces the probability of graduate mismatch during initial employment. Although work placements and practical knowledge produced the strongest individual effects, the findings generally support an inverse relationship between the number of vocational components

included in a degree program and the likelihood of employment mismatch. The benefits of integrating practical learning experiences appear particularly substantial within traditionally academic degree programs.

From a theoretical perspective, the findings further support the proposition that labor market mismatch can be explained by variations in the human capital developed through formal education and by ineffective job-search methods that fail to reduce information asymmetries between employers and graduates. Consequently, higher education institutions must continue strengthening curriculum relevance, employer engagement, experiential learning opportunities, and career support services to improve graduate employability and achieve sustainable labor market alignment.

Theoretical Framework

The quality trilogy is made up of quality planning, quality improvement, and quality control. If a quality improvement project is to be successful, then all quality improvement actions must be carefully planned out and controlled. Juran believed there were ten steps to quality improvement. These steps are: An awareness of the opportunities and needs for improvement must be created; improvement goals must be determined; organization is required for reaching the goals; training needs to be provided; initialize projects; monitor progress; recognize performance; report on results; track achievement of improvements; and repeat.

Malcolm Baldrige Award Criteria was developed into its respective seven categories. Each of these seven categories focused on a key process to achieve performance excellence. The Malcolm Baldrige Criteria emphasize on alignment of all these key processes. The Baldrige values and Concepts are built into the criteria to attain alignment of the seven categories yet without displaying the values and concepts specifically in the criteria itself. The Malcolm Baldrige Criteria used to be revised on a yearly basis and has changed to a once in two year's basis effective 2009 with the introduction of the Malcolm Baldrige Award Criteria 2009-2010 version. The Malcolm Baldrige Award is given to the best organization of its respective award categories. Each award Applicant has to exhibits the highest standards of Approach, Deployment of their key process in relation to the seven categories in the Malcolm Baldrige Criteria.

Many of the practitioners of TQM have successfully incorporated it into their culture, business systems and processes. It has provided a means of planning and controlling their business and auditing its performance. Below is an example of how such an educational system might look. Figure 1 Baldrige Education Criteria for Performance Excellence. Total Quality Management (TQM) Process series focuses on preparing the organization to achieve excellence in the seven Malcolm Baldrige criteria. The seven principles that provide a systems perspective for managing the process include: Leadership, Strategic Planning, Student, Stakeholder, & Market Focus, Information & Analysis, Faculty and Staff Focus, Process Management and Results. Three of the Baldrige Categories such as Leadership (Category 1), Strategic Planning (Category 2), and Student, Stakeholder and Market Focus (Category 3) represent as drivers. These categories are placed together to emphasize the importance of leadership focus on strategy and customers. Senior leaders set organizational direction and seek future opportunities for the organization. Core work includes Faculty and Staff Focus (Category 5), and Process Management (Category 6). The organizations' faculties, staff and key processes accomplish the work of the organization that yields overall performance Results (Category 7).

All actions point toward Results—a composite of product and service, customer, market and financial, and internal operational performance results, including workforce, leadership, governance, and social responsibility results. Information and Analysis (Category 4) are critical to the effective management of the organization and to a fact-based knowledge-driven system for improving performance and competitiveness. Information and Analysis (Category 4) serves as a foundation for the performance management system.

METHODOLOGY

This study employed a descriptive quantitative research design to examine the roles of Technology-Based Education (TBE) among State Universities and Colleges (SUCs) in the Zamboanga Peninsula and its contribution to regional industrialization. The descriptive approach was appropriate because it systematically described the existing conditions regarding the roles and performance of TBE institutions, as well as the level of industrialization

in the region. The quantitative method enabled the researcher to objectively measure and analyze respondents' perceptions using numerical data, thereby providing empirical evidence to address the research objectives.

The study was conducted in four State Universities and Colleges offering technology-based education programs and selected industries in the Zamboanga Peninsula, including canning companies, fishing corporations, and service-oriented industries. A total of 316 respondents participated in the study, consisting of 99 faculty members from TBE programs and 217 industry representatives**.** The respondents were selected through total enumeration sampling, wherein all qualified faculty members and identified industry representatives were included because of their limited population and their direct involvement in technology-based education and industrial operations.

Data were collected using a researcher-developed Industrialization Needs Survey, which was designed based on the study's research objectives. The instrument consisted of three sections that measured the roles of TBE, the performance of TBE institutions, and the level of industrialization in the Zamboanga Peninsula using a four-point Likert scale ranging from Strongly Agree (4**)** to Strongly Disagree (1)**.** To ensure content validity, the questionnaire was evaluated by five experts with doctoral qualifications and administrative experience in higher education. Its reliability was established through pilot testing involving respondents who were not included in the actual study. Prior to data collection, permission was secured from the presidents of participating SUCs and managers of the selected industries. Upon approval, the questionnaires were personally administered to faculty members and designated industry respondents, and all completed instruments were retrieved for analysis.

The collected data were encoded, organized, and analyzed using the Statistical Package for the Social Sciences (SPSS)**.** Descriptive statistics, particularly the weighted mean**,** were employed to determine the respondents' assessments of the roles of Technology-Based Education in terms of employment, skills acquisition, job alignment, relevant training, and state-of-the-art facilities and equipment. The same statistical measure was also used to evaluate the performance of TBE institutions and the level of industrialization in terms of economic growth, job creation, and technological innovation. The findings served as the basis for describing the contribution of Technology-Based Education to the industrial development of the Zamboanga Peninsula.

RESULTS AND DISCUSSION

On the roles of Technology-Based Education among State Universities and Colleges in terms of: employment; skills acquisition; job alignment; relevant trainings; state of the arts facilities and equipment

Table 1. Roles of Technology-Based Education in terms of Employment

Statements Graduates of TBE among SUCs	**Mean**	**Descriptive Rating**
Have Better Employment Opportunities	3.49	Strongly Agree
Well-Prepared to Enter the World of Work	3.44	Strongly Agree
Possessed Necessary Communication Skills	3.34	Strongly Agree
Possessed Necessary Technological Skills in their Area of Specialization	3.55	Strongly Agree
Possessed the Necessary Critical Thinking, Problem Solving and Positive Attitudes Toward Work	3.47	Strongly Agree
Overall Mean	**3.46**	**Strongly Agree**
Legend: 3.26 - 4.0 - Strongly Agree; 2.51 - 3.25 - Agree; 1.76 – 2.5 - Disagree; Strongly 1.0 – 1.75- Disagree		

Table 1 presents that the statement “Graduate of TBE among SUCs possessed necessary technological skills in their area of specialization got the highest mean of 3.55 describe strongly agree. This means that, the respondents

strongly agreed that graduates of TBE among SUCs acquired the needed skills for better employment. This implies that, technology graduates among SUCs were equip with necessary technological skills in their area of specialization. It further implies, that TBE among SUCs have a better role for the employability of their graduates. While statement " Graduates of TBE among SUCs possessed necessary communication skills" obtained the lowest mean of 3.34 described agree.

The findings of the study of Deblois (2020) on the Employment Profile of Graduates in a State University in Bicol Region, Philippines revealed that most of the graduates were in jobs that are highly congruent with their school training. However, the college must still take measures to improve the skills of the graduates.

Table 2. Roles of the Technology-Based Education in terms of Skills Acquisition

Statements	**Mean**	**Descriptive Rating**
The institution has a program selection and enrollment management.	3.16	Agree
Program content and curriculum are based on industry requirements that students may acquire.	3.11	Agree
Students have been taught the different competencies according to their specialization.	3.18	Agree
The institution had produced skilled and semi-skilled workers to meet the needs of Zamboanga's industrialization.	3.26	Strongly Agree
TBE programs of the institution are more responsive to new trends of skills and technology requirements than regular academic college programs.	3.25	Strongly Agree
Overall Mean	**3.19**	**Agree**

Legend: 3.26 - 4.0 - Strongly Agree; 2.51 - 3.25 - Agree; 1.76 – 2.5 - Disagree; Strongly 1.0 – 1.75 - Disagree

As shown in Table 2, two of the statements are in the rating of 3.26 – 4.0 described strongly agree and three are in the rating 2.51 – 3.25 described agree. The indicator "the institution had produced skilled and semi-skilled workers to meet the needs of Zamboanga's industrialization" got the highest mean of 3.26 described strongly agree and the lowest mean rating of 3.11 described agree is the indicator "program content and curriculum are based on industry requirements that students may acquire". Further, the overall mean rating is 3.19 described agree. This means that, the respondents agreed that the curriculum of the TBE programs among SUC's meet the demands of Zamboanga's industrialization. This implies that, the students acquired more technical skills since they were trained different competencies relevant to their specialization. It further implies that, TBE among SUCs have a vital role in acquiring skills for a better future of the graduates.

The study of Gequinto and Mads on Industrial Technology Graduates' Acquired Skills and Competencies from the University reveals that skills and competencies acquired by industrial technology graduates are all relevant and appropriate. The study also found that there is some to great extent use of acquired skills and competencies to their current employment. The study implies that the acquired skills and competencies from the university significantly provided the graduates the opportunities in the national and global markets and industries.

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Table 3. Roles of the Technology-Based Education in terms of Job Alignment

Statements **The SUC…**	**Mean**	**Descriptive Rating**
Ensures that the Programs Offered Lead to Jobs in Demand among Employers in the Target Labor Market.	3.20	Agree
Aligned their Curricular Content with the Immediate, or Technical, or Anticipated Future Needs of Employers.	3.28	Strongly Agree
Adopted Competency-Based Education, Contextualized Instruction that Promotes Work Readiness.	3.20	Agree
Has a Work-Based Learning Opportunities as a Way to Gain Learning Experience that Develops Relevant Skills.	3.20	Strongly Agree
Has a Student Advising and Support Services that Provide Students with Information about Labor Market and Demand	3.07	Agree
Overall Mean	**3.19**	**Agree**

Legend: 3.26 - 4.0 - Strongly Agree; 2.51 - 3.25 - Agree; 1.76 – 2.5 - Disagree; Strongly 1.0 – 1.75- Disagree

Table 3 disclosed that, one statement is in the rating of 3.26 – 4.0 described strongly agree and four are in the rating 2.51 – 3.25 described agree. The indicator "the institution aligned their curricular content with the immediate, or technical, or anticipated future needs of employers" got the highest mean of 3.28 described strongly agree and the lowest mean rating of 3.07 described agree is the indicator "the institution has a student advising and support services that provide students with information about labor market and demand". In addition, the overall mean rating is 3.19 described agree. This means that, the SUCs in Zamboanga Peninsula offering technology-based education programs has a job alignment with the demand of the industries operated in the area. This implies that technology-based education offered among SUCs in Zamboanga Peninsula has a great role to Zamboanga's industrialization since their curricular content was aligned to the technical future needs of employers and that their graduates has an easy access to employment.

Table 4. Roles of the Technology-Based Education in terms of Relevant Trainings

Statements	**Mean**	**Descriptive Rating**
The institution has plans for faculty trainings, Involvement, empowerment, and recognition so that students will receive good training.	3.23	Agree
The institution has strategies for providing special services to faculty and students such as counseling, re-training and other educational activities.	3.07	Agree
Course designs of the institution are continuously reviewed and enhanced based on student and industry feedback, teaching process, faculty capabilities and future requirements.	3.26	Strongly Agree
The institution has an evaluation and procedure for determining customer requirements and used these requirements for curriculum enhancement.	3.19	Agree

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Faculty, personnel and students are provided by the institution with latest technology and logistics.	3.04	Agree
Overall Mean	**3.16**	**Agree**

Legend: 3.26 - 4.0 = Strongly Agree; 2.51 - 3.25 = Agree; 1.76 – 2.5 = Disagree; Strongly 1.0 – 1.75 = Disagree

Table 4 revealed that, one statement is in the rating of 3.26 – 4.0 described strongly agree and four are in the rating 2.51 – 3.25 described agree. The indicator "course designs of the institution are continuously reviewed and enhanced based on student and industry feedback, teaching process, faculty capabilities and future requirements" got the highest mean of 3.26 described strongly agree and the lowest mean rating of 3.04 described agree is the indicator "faculty, personnel and students are provided by the institution with latest technology and logistics". It is also noted that, the overall mean rating is 3.16 described agree. This means that, the respondents agreed that the curriculum of the TBE programs among SUCs in Zamboanga Peninsula has been reviewed to meet the demand of the industry. However, faculty teaches TBE programs is not yet fully equipped with the latest technology and logistics.

Table 5. Roles of the Technology-Based Education in terms of state of the arts facilities and equipment

Statements	**Mean**	**Descriptive Rating**
The institution has a well-stocked library that makes students complete easier their assignments and get some quiet study done between classes.	3.25	Agree
The institution has computer laboratories for completing assignments and research between classes.	3.35	Strongly Agree
The institution has a medical clinic that can provide first-aid treatment and information and referrals on general medical matters.	3.35	Strongly Agree
The institution has available and functional basic and advanced equipment responsive to the changing programs of educational delivery.	3.25	Agree
The institution has gymnasium, sporting facilities and equipment and building grounds such as, athletic fields, playgrounds, and areas for outdoor learning.	3.28	Strongly Agree
Overall Mean	**3.30**	**Strongly Agree**

Legend: 3.26 - 4.0 - Strongly Agree; 2.51 - 3.25 - Agree; 1.76 – 2.5 - Disagree; Strongly 1.0 – 1.75 - Disagree

Table 5 reflected that, three statements are in the rating of 3.26 – 4.0 described strongly agree and two are in the rating 2.51 – 3.25 described agree. The indicator "The institution has computer laboratories for completing assignments and research between classes and medical clinic that can provide first-aid treatment and information and referrals on general medical matters." got the highest mean of 3.35 described strongly agree and the lowest mean rating of 3.25 described agree are the indicators "The institution has a well-stocked library that makes students complete easier their assignments and get some quiet study done between classes" and "The institution has available and functional basic and advanced equipment responsive to the changing programs of educational delivery".

It is also to be observed that, the overall mean rating is 3.30 described strongly agree. This means that, the respondents strongly agreed that TBE among SUCs in Zamboanga Peninsula were equipped with complete and

latest facilities for student services. This implies that they have adequate library holdings, functional and advanced equipment in response to educational delivery mode, computer and shop laboratories, and other supports facilities to equipped faculty and students. It further implies that, the roles of TBE is important to the state of the art facilities and equipment among SUCs in Zamboanga Peninsula. Because TBE with collaboration of industries enhanced facilities and equipment.

Table 6. Summary on the Roles of TBE among SUCs

Statements	Mean	Descriptive Rating
Employment	3.46	Strongly Agree
Skills Acquisition	3.19	Agree
Job Alignment	3.19	Agree
Relevant Trainings	3.16	Agree
State of the Art Facilities and Equipment	3.30	Strongly Agree
Legend: 3.26 - 4.0 - Strongly Agree; 2.51 - 3.25 - Agree; 1.76 – 2.5 - Disagree; Strongly 1.0 – 1.75 - Disagree		

Table 6 provides the summary on the roles of technology-based education among SUCs in Zamboanga Peninsula to employment, skills acquisition, job alignment, relevant trainings, and state of the art facilities and equipment. Evidently, it was the area of the employment were educators strongly agree having obtained the highest overall mean. The second area that they have identified and should be fully functional was the state of the art facilities and equipment described strongly agreed. The third area that the educators think need improvement was on skills acquisition and job alignment described agreed followed by the relevant trainings on faculty and students as the least area with described as agreed. These findings suggest that the roles of technology-based education among SUCs must be focused on faculty and students especially on their professional growth and development, skills acquisition and job alignment to practice effectively their specialized field in meeting the needs of the industries in Zamboanga Peninsula.

CONCLUSION

The study's findings indicate that Technology-Based Education (TBE) in State Universities and Colleges (SUCs) within the Zamboanga Peninsula significantly contributes to student employment readiness and regional industrial advancement. Of the five variables evaluated, employment had the highest overall mean score (3.46, highly Agree), suggesting that respondents highly regarded TBE graduates as equipped with the technological capabilities, critical thinking abilities, and work preparedness demanded by employers. This indicates that TBE programs significantly enhance graduates' employability.

Similarly, cutting-edge facilities and equipment garnered a high overall assessment (3.30, Strongly Agree), indicating that SUCs have predominantly developed sufficient learning resources, laboratories, medical facilities, and instructional equipment that enhance quality technology-driven instruction. These materials furnish students with actual learning experiences necessary for cultivating industry-relevant competencies.

The results indicate that courses are predominantly aligned with industry requirements and that students attain competences pertinent to their specialization. Continuous curriculum enhancement, robust industry alliances, enhanced labor market assistance services, and extensive faculty development programs are essential to maintain graduates' competitiveness in the continuously shifting technological world.

The study indicates that Technology-Based Education in SUCs of the Zamboanga Peninsula has effectively enhanced graduate employability and delivered quality educational resources. Continuous enhancement of

curriculum adaptability, faculty skill development, industry partnerships, and training opportunities is crucial to maintain the relevance and efficacy of technology-based education in addressing current and future workforce requirements.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are offered:

1. Enhance collaboration between industry and academia. State Universities and Colleges must forge strong collaborations with industries via internships, apprenticeship programs, collaborative research, and consistent industry consultations to guarantee that courses are aligned with current and emerging workforce requirements.

2. Improve curriculum evaluation and competency alignment. Academic programs must be periodically reviewed with the involvement of industry partners to incorporate developing technologies, digital competences, and future employment skills into technology-focused educational curriculum.

3. Allocate resources for faculty development. State Universities and Colleges (SUCs) ought to offer ongoing professional development opportunities for professors through advanced technical training, industry immersion, certification programs, and engagement in national and worldwide seminars to enhance instructional proficiency.

4. Enhance student career support services. Institutions must to enhance career advising, labor market information services, job placement support, and employer networking initiatives to adequately prepare students for employment and provide a seamless transition from school to work.

5. Enhance teaching facilities and apparatus. Despite favorable ratings for facilities, universities must constantly upgrade laboratories, workshops, digital infrastructure, simulation apparatus, and educational technologies to align with technological progress and industry benchmarks.

6. Enhance possibilities for skill development. State universities and colleges (SUCs) ought to offer students supplementary competency-based training, industry certifications, entrepreneurship initiatives, and experiential learning opportunities to further augment their technical, communication, and employability abilities.

7. Perform regular graduate monitoring and employer satisfaction assessments. Ongoing evaluation of graduate employability and employer feedback will yield significant evidence for enhancing academic programs, pedagogical approaches, and institutional policies.

8. Conduct subsequent research. Future study may investigate the efficacy of Technology-Based Education through inferential statistical analyses, structural equation modeling, or longitudinal research designs. Researchers might further examine additional characteristics affecting graduate employability, including digital literacy, interpersonal skills, innovative capabilities, and institutional support, across various regions of the Philippines to corroborate and enhance the current findings.

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