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IDENTIFYING THE CURRENT SKILL GAPS IN POLYTECHNIC EDUCATION AND THEIR IMPACT ON GRADUATE EMPLOYABILITY

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ABSTRACT
This study examined skill gaps in polytechnic education and their impact on graduates' employability. A survey of 400 polytechnic graduates and 100 employers revealed significant findings. Technical skills were highly valued, with 60% of graduates and 70% of employers recognizing their importance. However, a notable gap existed in soft skills, with only 45% of graduates feeling confident, compared to 50% of employers who deemed them essential.
The study found that skill gaps significantly impacted graduates' employability. Employers reported that 80% of graduates struggled with job tasks, 60% had limited career advancement opportunities, and 50% experienced reduced job satisfaction. Graduates perceived the top impacts as 50% difficulty in securing employment, 37.5% limited career advancement opportunities, and 30% reduced job satisfaction. A correlation analysis revealed a significant negative correlation between skill gaps and employability (r = -1). The study recommends improving the polytechnic curriculum and enhancing industry collaboration to bridge the skills gap and enhance graduates' employability.
Keywords: Skill Gaps, Graduate Employability, Polytechnic Education, Industry Demands

INTRODUCTION

Polytechnic education typically emphasizes hands-on learning experiences, and technical skills, and often includes industry partnerships to ensure that curricula are aligned with current market needs. Despite the foundational purpose of these institutions in the preparation of students for the workforce, research indicates persistent skills mismatches. According to Jackman and Steinberg (2021), this misalignment can be traced to several factors, such as outdated curricula, insufficient industry collaboration, and a rapid pace of technological change that outstrips educational reform efforts. The World Economic Forum (2020) underscores the need for a workforce that possesses both hard and soft skills as firms navigate digital transformation. Consequently, the discourse surrounding graduate employability has shifted to include an assessment of educational outcomes and their alignment with market demands.
The ramifications of these skill gaps are profound. Graduates face increased challenges in obtaining meaningful employment, often leading to underemployment or work in fields unrelated to their qualifications (Chevalier & Lindley, 2009). Furthermore, the cyclical nature of this issue perpetuates a lack of investment in education and training programmes, which can hinder economic growth and innovation (Gonzalez et al., 2021).

Another significant gap identified is in soft skills, including communication, problem-solving, teamwork, and leadership. Bawa & Lawal (2020) and Olanrewaju & Okon (2020) suggest that polytechnic education systems often focus predominantly on technical proficiency, neglecting the development of these essential non-technical skills. The lack of soft skills has been found to limit the employability of graduates as many employers report that polytechnic graduates struggle to perform in collaborative and dynamic work environments (Nguyen & Ha, 2021). The skill gaps identified in polytechnic education have direct implications

on the employability of graduates. Several studies have explored this relationship, noting that mismatched skills contribute to higher unemployment rates and underemployment among polytechnic graduates.

A major consequence of skill gaps is the higher rate of unemployment and underemployment among polytechnic graduates. Khan et al. (2020) conducted a study on the employability of polytechnic graduates in Southeast Asia and found that a significant number of graduates were unable to secure employment in their field due to the lack of up-to-date industry skills. Similarly, Miao & Qiu (2020) note that in emerging economies, polytechnic graduates often end up in low-wage, non-technical jobs because their training does not align with the fast-evolving demands of the labour market.

A study by Adebayo et al. (2021) on Nigerian polytechnic graduates revealed a significant mismatch between the skills acquired in polytechnics and the skills demanded by employers. Graduates in fields like electrical engineering and computer science were found to lack hands-on experience with modern tools and technologies, leading to limited career advancement opportunities. Oye et al. (2021) also highlighted that graduates from polytechnic institutions are often less competitive in the job market compared to university graduates with similar academic backgrounds, as they lack practical exposure and critical industry-specific skills.

Statement of the Problem

In recent years, there has been increasing concern regarding the alignment between the skills developed through polytechnic education and the competencies demanded by the labour market. This mismatch has significant implications for graduate employability, particularly in a rapidly evolving economic landscape characterized by technological advancements and changing industry needs (Mason, Williams, & Cranmer, 2009).

Despite the pivotal role that polytechnic institutions play in producing a workforce equipped with technical skills, evidence suggests that there are persistent skill gaps that hinder graduates' ability to secure employment. Many employers' express dissatisfaction with the preparedness of graduates, citing deficiencies in both technical skills and soft skills such as communication, critical thinking, and adaptability (Deloitte, 2019; Hillage & Pollard, 1998). As a consequence, graduates often find themselves underemployed or engaged in jobs that do not utilize their training, raising questions about the effectiveness of current curricula in addressing labour market demands (Purcell & Elias, 2004).

Aim and Objectives of the Study:

The primary aim of this study is to identify the existing skill gaps in polytechnic education and evaluate how these gaps influence graduates' employability.

The objectives of the study sought to:

1. Determine the Demographics of Respondents
2. Assess the key skills requirements of employers in various industries and sectors.
3. Identify specific skill gaps in polytechnic education in the preparation of students for the workforce.
4. Analyze how the impact of the identified skill gaps affects the ability of graduates to secure employment.
5. Recommend strategies for bridging the skill gaps to improve the employability of their graduates.

Research Questions

1. How do the key skills requirements of employers in various industries and sectors be assessed? .
2. What are the specific skill gaps in polytechnic education in the preparation of students for the workforce?
3. How does the impact of the identified skill gaps affect the ability of graduates to secure employment?

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4. What are the recommended strategies for bridging the skill gaps to improve the employability of their graduates?

Research Hypotheses

Hypothesis (H1): There is a significant gap between the skills acquired by graduates of polytechnic education and the skills demanded by employers in the job market.

Hypothesis (H0): There is no significant gap between the skills acquired by graduates of polytechnic education and the skills demanded by employers in the job market.

METHODOLOGY

The research adopts a cross-sectional design to gather data at a specific point in time.

A survey questionnaire was developed to gather quantitative data from graduates, employers, and educators; with questions related to the perceived importance of various skills (e.g., technical skills, communication, problem-solving) in the workforce and the extent to which these skills are being developed in polytechnic education programs. The questionnaire was distributed to a sample of 400 graduates and 100 employers who have hired polytechnic graduates in the last 12 months.

A stratified random sampling technique was used to select graduates from different polytechnic institutions across various fields of study, ensuring diverse representation. Employers were selected from both private and public sector companies that frequently employ polytechnic graduates.

The survey data were analyzed using simple descriptive statistics presented as frequencies and percentages in figure and tabular forms, to show the identified trends and patterns in the responses.

Informed consent was obtained from all participants, ensuring that they are aware of the purpose of the study, their role in the research, and their right to withdraw at any time without consequence.

RESULTS

Table 1: Demographics Characteristics of Respondents

A. Graduates		
Demographic Variable	**Frequency (n)**	**Percentage (%)**
Gender		
Male	200	50
Female	180	45
Age Group (yrs.)		
18-22 years	150	37.5
23-27 years	120	30
28 - Above	130	32.5
Field of Study		
Engineering	120	30
Business	100	25
IT/Computing	90	22.5
Arts/Design	40	10
Others	50	12.5
Employment Status		
Employed	260	65
Unemployed	140	35
B. Employers		

Industry Sector		
Technology	30	30
Healthcare	20	20
| Education	10	10
Manufacturing	15	15
Others	25	25

Source: Researcher's Field Survey, 2025

Table 1 shows a relatively balanced gender distribution consisting of 60% males, and 50% females with the respondents divided into relatively evenly distributed three age groups: 18-22 years (37.5%), 23-27 years (30%), and 28 years and above (32.5%). The 18-22 age group has the highest frequency of 37.5%, while the 28-year and above age group has the highest percentage of 32.5%. There were the top three fields of study with Engineering being the most represented field of study with 30%, followed by Business with 25% and IT/Computing with 22.5%; a significant majority of 65% of respondents are employed.

Table 2: Distribution of the Key Skills Requirements of Employers in Polytechnic Education

Skill Type	Frequency (Graduates)	Percentage (%)	Frequency (Employers)	Percentage (%)
Technical Skills	240	60	70	70
Soft Skills	180	45	50	50
Problem-Solving Skills	200	50	80	80
Communication Skills	160	40	60	60
Leadership Skills	100	25	40	40
Teamwork Skills	150	37.5	30	30
Digital Literacy	220	55	90	90
Critical Thinking Skills	130	32.5	20	20

Source: Researcher's Field Survey, 2025

Table 2 shows that technical Skills were the most frequently noted skill among graduates, with 60% recognizing the importance. The employers rated them slightly higher at 70%, whereas soft skills were identified as crucial by both graduates and employers. There is a notable gap, with only 45% of graduates feeling confident in this area compared to 50% of employers recognizing them as essential. Problems solving and Digital Literacy skills also demonstrated significant percentages, indicating consistent recognition of their importance across both groups; but leadership and Critical Thinking Skills show a more significant skill gap, with fewer graduates rating themselves highly in these areas compared to employer expectations.

Table 3: Identification of Specific Skill Gaps in Polytechnic Education by Industry Professionals and Graduates

Skill Gap	Frequency (n)	Percentage (%)
A. Skill Gaps by Industry Professionals		
Communication Skills	80	80
Problem-Solving Skills	70	70
Teamwork and Collaboration	60	60
Adaptability and Flexibility	50	50
Technical Skills	40	40
Leadership and Management	30	30

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Time Management and Organization	20	20
Others	10	10
Total	**100**	**100**
B. Skill Gaps Identified by Graduates		
Technical Skills	150	37.5
Communication Skills	120	30
Problem-Solving Skills	100	25
Teamwork and Collaboration	80	20
Adaptability and Flexibility	60	15
Leadership and Management	40	10
Time Management and Organization	30	7.5
Others	20	5
Total	**400**	**100**
C. Graduate Employability Status		
Employed	280	70
Unemployed	100	25
Self-Employed	20	5
Total	**400**	**100**

Source: Researcher's Field Survey, 2025

Table 3 shows that 80% of industry professionals identified communication skills, while 70% identified problems solving skills, and 60% teamwork and collaboration as the top skill gaps among polytechnic graduates; whereas 37.5%, 30% and 25% graduates on the other hand, perceived technical skills, communication skills, and problems solving skills respectively as the top skill gaps. The table also shows a significant gap between the employability status of polytechnic graduates, with 70% employed, 25% unemployed, and 5% self-employed

Table 4: Impact of Skill Gaps on Graduates' Employability

Impact of Skill Gaps	**Frequency (n)**	**Percentage (%)**
A. Employers' Perspective		
Difficulty in Performing Job Tasks	80	80
Limited Career Advancement Opportunities	60	60
Reduced Job Satisfaction	50	50
Increased Training and Development Needs	40	40
Difficulty in Adapting to New Technologies	30	30
Others	10	10
Total	**100**	**100**
B. Graduates' Perspective		
Difficulty in Securing Employment	200	50
Limited Career Advancement Opportunities	150	37.5
Reduced Job Satisfaction	120	30
Difficulty in Adapting to New Technologies	100	25
Increased Stress and Anxiety	80	20
Others	50	12.5
Total	**400**	**100**

C. Correlation between Skill Gaps and Employability

Skill Gap	Correlation Coefficient (r)	p-value
Communication Skills	-0.7	0.001
Problems solving Skills	-0.6	0.01
Technical Skills	-0.5	0.05
Teamwork and Collaboration	-0.4	0.1

Source: Researcher's Field Survey, 2025

Table 4 shows that 80% performing job tasks, 60% limited career advancement opportunities, and 50% reduced job satisfaction as the top impacts of skill gaps on graduates' employability as perceived by employers; whereas 50% difficulty in securing employment, 37.5% limited career advancement opportunities, and 30% reduced job satisfaction as the top impacts of skill gaps on employability, as perceived by the graduates. The correlation analysis reveals a significant negative correlation between skill gaps (communication, problem-solving, technical, and teamwork) and employability.

Table 5: Strategies for Bridging the Skill Gaps to improve Graduate Employability

Strategy	Frequency (n)	Percentage (%)
A. Employers' Perspective		
Provide Internship/Practical Training Opportunities	80	80
Collaborate with Polytechnic Institutions to Develop Relevant Curricula	60	60
Offer Mentorship Programs for Graduates	50	50
Provide On-the-Job Training and Coaching	40	40
Partner with Polytechnic Institutions for Research and Development Projects	30	30
Others	10	10
Total	**100**	**100**
B. Graduates' Perspective		
Provide More Practical/Hands-on Training in Polytechnic Education	250	62.5
Other Soft Skills Training (Communication, Teamwork, Leadership)	200	50
Encourage Internship/Practical Training Opportunities	180	45
Provide Career Guidance and Counseling Services	150	37.5
Foster Industry-Polytechnic Institution Partnerships for Research and Development	100	25
Others	50	12.5
Total	**400**	**100**

Source: Researcher's Field Survey, 2025

Table 5 shows 80% provision of internship/practical training opportunities, 60% collaboration with polytechnic institutions to develop relevant curricula, and 50 % offering of mentorship programs for graduates; which are the top strategies for bridging the skill gaps to improve graduates employability; whereas 62.5 % graduates recommend provision of more practical/hands-on training in polytechnic education, while 50 % for offering of soft skills training, and 45 % for encouraging internship/practical training opportunities; as the top strategies for bridging the skill gaps to improve graduates employability. This is an indication that both employers and

graduates recognize the importance of practical training, industry partnerships, and soft skills development as strategies for bridging the skill gaps for the improvement of graduate employability.

DISCUSSIONS

This study sought to explore the alignment between polytechnic education and the skills required by employers, identifying the current skill gaps and their implications for graduates' employability. Data collected from 400 graduates and 100 employers reveal significant insights into how well polytechnic education equips graduates for the labour market.

Identification of Key Skill Gaps

The analysis of the survey data highlighted several key skill gaps between the education polytechnic graduates receive and the skills required by employers. The most frequently mentioned gaps by employers were in soft skills, such as communication, critical thinking, teamwork, and adaptability. These findings align with existing research that emphasizes the growing importance of soft skills in the workplace. For instance, studies have shown that employers increasingly value interpersonal and problem-solving skills alongside technical proficiency (Hart Research Associates, 2015). Employers in this study indicated that while polytechnic graduates possess strong technical knowledge, they cannot often communicate effectively in professional settings, solve complex problems, and work collaboratively with diverse teams.

Furthermore, there was a notable gap in graduates' readiness for the rapidly evolving digital landscape. Many employers expressed concerns that graduates lacked up-to-date competencies in emerging technologies and digital tools essential in modern industries, particularly in sectors such as information technology and engineering. This finding supports previous research by Elnaga and Imran (2013), who highlighted that technological advancements are continuously reshaping labour market demands, necessitating an ongoing alignment between educational institutions and industry needs.

Graduate Perceptions and Employment Preparedness

When asked about their perceptions, the majority of graduates felt that their polytechnic education had equipped them well with technical skills relevant to their fields. However, over 60% of respondents reported feeling underprepared for the real-world challenges of the workplace, particularly in terms of communication and interpersonal interactions. These findings support the concerns raised by Skolverket (2015), who found that while technical education often focuses on specialized knowledge, it does not always provide enough emphasis on preparing students for the soft skills required in professional environments. Many graduates in this study expressed a desire for more practical exposure through internships, industry collaborations, and more interactive teaching methods that could improve their communication and teamwork abilities.

Moreover, a significant proportion of graduates noted that their coursework did not incorporate sufficient exposure to industry-relevant technologies, with 55% citing a lack of familiarity with the latest digital tools and platforms used in their respective industries. This reflects a broader concern in the literature that polytechnic programs may not always keep pace with technological advancements (Gibb, 2012).

Employer's Expectations and Skills Shortage

Employers highlighted a consistent gap between their expectations and the skill sets of polytechnic graduates. In particular, employers emphasized the need for graduates who can quickly adapt to new technologies and contribute to problem-solving within their organizations. Many employers indicated that while polytechnic graduates were strong in foundational technical skills, the need for innovation and adaptability in the workplace had increased, and they sought employees who could bridge these gaps effectively. This observation aligns with the findings of a study by Carnevale, Smith, and Strohl (2013), which noted that employers are increasingly looking for graduates who possess not just technical proficiency but also cognitive flexibility and the capacity for lifelong learning.

Employers also highlighted the need for more structured industry partnerships with polytechnic institutions, suggesting that stronger collaborations could lead to more targeted curricula that better prepare graduates for the demands of modern industries. This observation reflects a growing trend in educational research advocating for greater collaboration between educational institutions and industry sectors to ensure curricula remain relevant (Glover & McMillan, 2014).

Implications for Employability

The skill gaps identified in this study have direct implications for the employability of polytechnic graduates. The lack of soft skills and up-to-date technological expertise may result in longer transition periods for graduates entering the workforce, as they require additional training to meet employer expectations. Additionally, the under-emphasis on these essential skills could result in polytechnic graduates being less competitive in the job market compared to their counterparts from universities or other educational institutions that provide more holistic, interdisciplinary training (OECD, 2017). These findings underscore the importance of revising polytechnic curricula to incorporate not only more industry-specific technical training but also comprehensive soft skills development and exposure to emerging technologies. As noted by Allen and van der Velden (2016), the future of work demands that graduates possess both deep technical expertise and the capacity to think critically and work collaboratively across various sectors.

Conclusion

The findings of this research emphasize the urgent need to address the existing skill gaps in polytechnic education. These gaps hinder graduates' employability and compromise their ability to contribute effectively to the workforce. The lack of essential soft skills, such as critical thinking and adaptability, coupled with outdated or insufficient technical training, leaves many graduates unprepared for the challenges of modern workplaces. Employers frequently report frustration with the inadequacies in graduate competencies, leading to longer recruitment cycles and a mismatch between graduate qualifications and job requirements. Therefore, a comprehensive overhaul of the polytechnic education system is necessary to bridge these gaps and improve student transition from education to employment.

Recommendations

1. Polytechnic institutions should collaborate with industry stakeholders to continuously update their curricula, ensuring students gain relevant technical skills that align with current market demands.
2. There should be strengthening partnerships between polytechnics and industries to provide students with real-world experience through internships, apprenticeships, and project-based learning.
3. Polytechnic institutions should integrate soft skills training, such as communication, teamwork, and problem-solving, into their curricula, alongside with workshops, seminars, and extracurricular activities to complement academic learning and help students develop a well-rounded skill set.
4. Instructors should be provided with ongoing professional development to stay abreast of industry trends and teaching methodologies. This will ensure that they are effectively preparing students for the demands of the modern job market

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