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TVET Students' Employability Skills: An Investigation on Graduate Employability Level at a Malaysian Higher Learning Institution

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Abstract

This research examines the TVET graduate employability level at a Malaysian higher learning institution. In keeping up with current trends of the industry, there is an increasing need of higher learning institutions to prepare graduates who are ready for the work force. The World Economic Forum (2020), in its effort to map trends of jobs, skill relevance and rates of change within the industry constantly discusses the skills needed from graduates before they enter the workforce. Adding the extra challenge from the rapid development of Artificial Intelligence (AI), it is becoming more paramount for higher learning institutions to produce graduates that are well-equipped with the relevant skills to meet with the demands of the industry. The TVET field, being a key player in producing human capital for the industry, is not exempted from the pressure of producing such graduates. Hence, this study attempts to investigate the Graduate Employability (GE) skills among TVET graduates and to assess how they perceive their GE levels. A quantitative research design was employed with the administration of an online survey. As part of a bigger data collection procedure, the survey was completed by 169 TVET students from one faculty at one Malaysian public university. The survey focused on five GE skills; namely communication skills, technology skills, adaptability skills, self-efficacy skills and leadership skills. The data was analyzed using SPSS, utilizing the descriptive statistics. The overall findings are first discussed, followed by the discussion of each skill, which help the study to identify skills that require further intervention needed by the students. Some of the salient findings suggest the students are least confident in their technology and adaptability skills, which confirms existing literature's discussion on the need of reskilling and upskilling in the work force. The findings also suggest a further investigation in examining existing TVET curriculum, as to how the curriculum could support these TVET students better in their technology and adaptability skills.

Keywords: TVET, Graduate Employability (GE), GE Skills, Higher Education.

Introduction

In 2020, the World Economic Forum (2020), produced a report that discusses the importance of producing more resilient industry workers in a world where Industrial Revolution 4.0 was taking place. The focus then was on producing human capital with strong 'soft skills' to remain relevant in the industry. Fast forward four years later, the World Economic Forum (2024) is highlighting how investments in technology, economy or environment would be in vain if investments are not made in people and equitable opportunities. This is what the President of the European Commission addresses as a multi-inflection point in addressing the world crises, where in examining one issue, other world issues must not be ignored (World Economic Forum, 2023). Moving in a fast-paced world, in a post-pandemic era, the future work force now is not just competing against fellow human, but also with technology. As the world of Artificial Intelligence (AI) is rapidly evolving, it is becoming more crucial for graduates to level up their employability games, before they face the harsh reality of the industry and the evolution of AI.

Lee (2020), indicates that there is a mounting pressure for TVET graduates to improve their employability rates, given the current pace of growth and development for the TVET sector in Malaysia. In keeping up with the industrial demands, many initiatives were founded, with the sole aim of producing human capital that matches the industry's requirements. The Technical and Vocational Education and Training (TVET) field is a key player in producing graduates that are relevant to the industry that will be receiving them as their employees. TVET graduates are perceived to have more focus on training towards technical aspects and hands-on capabilities, rather than academic achievements. TVET plays an important role in a country's economic development since it produces manpower that could fulfil the needs of the industries requiring skilful technical talents (UNESCO, 2015).

The current literature on TVET discusses a plethora of issues surrounding TVET. Among them are producing TVET graduates that are not just employable, but possesses traits that will make them much more desirable by the industry. Most important of all, TVET could assist in reducing unemployment rate thus improving the country's economic growth. Although some literature indicates that TVET graduates are more employable than other graduates, some also argue that the quality of TVET graduates are more inconsistent as compared to others (Hawati and Tan, 2023). Of course, the issue of quality warrants further investigation on the education provider, curriculum and other stakeholders. In lieu of this, this article intends to take on this point to first examine how TVET students perceive their level of Graduate Employability (GE). The research question that guides the current study is as follows:

1. What are the TVET students' current level of Graduate Employability (GE) skills confidence?

In other words, the current study is trying to assess how confident the TVET graduates are with their GE skills.

Literature Review

TVET in Higher Learning Institutions

The initial transition from higher education institutions (HEI) to employment represents a critical and prominent phase for graduates and is an ever-etching thought for students. This

is especially critical for graduates hailing from the Technical Vocational Education and Training (TVET) sector. With the current pace of growth and development for the TVET sector in Malaysia endorsed by the government, there is a sense of pressure for TVET graduates to improve its employability rates (Lee, 2020). In Malaysia for example, various Ministries and government agencies have been given the responsibilities to look into the future and potential of TVET programs and the graduates. A huge allocation of funding has been identified for the country's TVET agenda (Abd Majid, Sharil & Kamaruzaman, 2023). From time to time, the Malaysian government urges concerted efforts between the industries, universities and government agencies towards strengthening TVET programs and improved graduate quality (Aqli, Hasan and Sucita 2019).

In general, it is known that TVET programs aim to fulfil the need of providing skilled graduates in terms of technical and hard skills. The significance of TVET is a critical component of the educational system not only in Malaysia but across the world as it addresses the supply for skilled labour across a variety of industries. TVET possesses a wide range of programs that ultimately provide students and potential graduates with theoretical knowledge as well as practical skills required to execute an array of specific tasks (Hawati and Tan, 2023). There has been pressure from the industries for TVET graduates to be equipped with relevant soft skills besides the emphasis on technical skills (Noor, 2023).

Graduate Employability Skills

The effects of the Covid-19 pandemic have left ever-lasting consequences. Despite the world resuming everything as prior to the pandemic, nothing has truly been the same since. In 2020, the World Economic Forum explained that half the working population of the world are in dire need to reskill or equip themselves with relevant skills within the next five years. This is primarily due to the disruptions and impacts of the pandemic on the economic sector of the world. This has since caused a surge of events that has ignited the flood of jobs overtaken by automation and other forms of technological advancement.

The World Economic Forum (WEF) is responsible for mapping trends of jobs, skill relevance and rate of change of the industries. Although its sentiments appear to be bleak, it provides insights on how the public can remain relevant and competitive for the future. According to Schwab and Malleret (2020), the innovation and rapid advancements of technology merely opens opportunities for people to further utilise and capitalise on its aids. The top ten skills of 2025 as espoused by WEF (2020) as summarized below. These skills are deemed necessary skills for TVET graduates to be employable in the era of technology advancement of the 21st century.

Top 10 skills of 2025:

1. Analytical thinking and innovation
2. Active learning and learning strategies
3. Complex problem-solving
4. Critical thinking and analysis
5. Creativity, originality and initiative
6. Leadership and social influence
7. Technology use, monitoring and control

8. Technology design and programming
9. Resilience, stress tolerance and flexibility
10. Reasoning, problem-solving and ideation

The skills mentioned above could be categorized into communication skills, adaptability skills, self-efficacy skills, leadership skills and communication skills, which provides the five major constructs that are investigated for this article.

Methodology

Research Design

A quantitative research design was used to answer the research question, where the research instrument collects quantitative data through an online survey. The quantitative data yielded relevant findings that help to answer the research question, which is the TVET students' level of confidence on their GE skills.

Participants

The participants consist of 169 undergraduate students, undertaking a Graphic Design course at the Faculty of Art and Design. The students were all in their final year and they have completed some form of internship or work placement during the course of their studies. In general, most of them can be considered excellent students, where more than 110 has a CGPA of above 3.50.

Instrument

This paper is part of a bigger research project, which examines various issues on GE among the TVET graduates. The instrument was created with the sole purpose of evaluating various aspects of GE skills among TVET graduates, and it was adapted from a few established instruments to ensure comprehensiveness among the constructs that are investigated. Section A of the instrument examined the demographic profiles of the respondents; Section B evaluates the participants' perception on their GE level; Section C explores the common teaching practices in the TVET programme and finally Section D investigates the challenges faced by TVET students in their programme of study. For the purpose of this paper, only data pertaining to the TVET students' perception on their GE skills is presented. The instrument was piloted and the Cronbach Alpha value for the instrument is .977, which suggests that the instrument is highly reliable.

Data Analysis

In analyzing the data, a descriptive statistical analysis was conducted to analyze the means and standard deviation for each item and construct. A 7-point Likert scale was used in the questionnaire, and the interpretation of the data is guided by Pimentel (2019), as indicated in Table 1 below:

Table 1
7-point Likert Scale Reference

Likert Scale	Interval	Difference	Description
1	1.00-1.85	**0.85**	Very bad
2	1.86-2.71	**0.85**	Rather bad
3	2.72-3.57	**0.85**	Bad
4	3.58-4.43	**0.85**	Neither good nor bad
5	4.44-5.29	**0.85**	Good
6	5.30-6.15	**0.85**	Rather good
7	6.16-7.00	0.84	Very good

Findings

The findings will help to answer the following research question:

1. What are the TVET students' current level of Graduate Employability (GE) skills confidence?

The constructs for the GE skills are divided into communication skills, technology skills, adaptability skills, self-efficacy skills and leadership skills. The findings and the discussion section will first present the overall mean score for all five GE skills construct, before moving on to the analysis of each individual GE skills construct.

Table 2
Overall Mean Score for GE Skills

	Communication	Technology	Adaptability	Self-efficacy	Leadership
Mean	5.5266	5.0756	5.1528	5.4264	5.2383
N	169	169	169	169	169
Std. Deviation	.70352	.72211	.85880	.75891	.83537

Table 2 indicates that the highest GE skill that the students are most confident about is their communication skill (M= 5.53, SD= 0.703). This indicates that the students are confident with their communication skills, which are not just limited to verbal communication, but it includes their ability to communicate in the written form as well as their ability to function within the communicative competence domain, that includes functioning in a socially acceptable manner. The students also appear to be confident with their self-efficacy skills (M= 5.43, SD= 0.759). Schwarzer & Jerusalem (1995) measures self-efficacy as an individual's belief in their ability to succeed in specific situations. This means that the TVET students in this study believe that they are able to thrive based on their own merit and are self-driven to achieve their goals. On the other hand, surprisingly, the TVET students feel the least confidence about their technology skills (M= 5.07, SD=0.722), and this is followed by adaptability skills (M=5.15, SD=0.859). This two particular findings seems to echo the sentiments in the TVET field where the notion of reskilling and upskilling seems to be the focus in the current literature (World Economic Forum, 2023; Malaysian TVET Council, 2024).

Communication Skills

The communication skills construct investigates an array of communication skills possessed by the TVET graduates. From Table 3, it can be seen that among the items in the communication construct, two items that yielded the highest mean score are item "*I am able and willing to accept ideas from others*" (M= 5.90, SD=0.930) and item "*I am able to contribute to a group or organization to achieve a common goal*" (M=5.90, SD=0.792). These two findings indicate the students perceive that they do not have any issues to work with others. On the other hand, the lowest mean score is 5.14 (SD=0.982) for the item "*I am able to provide the appropriate discourse for a situation accordingly.*", followed by item "*I am able to speak English proficiently*." (M= 5.24, SD= 1.07). This suggests that TVET students lack confidence with their English proficiency skill, especially when it comes to speaking.

Technology Skills

In evaluating the TVET students' technology skills, the items included investigations on their ability from using common technological tools to the more advanced tools such as cloud computing and big data analysis. From Table 4, it could be seen that the students show the highest mean score of 5.64 (SD=0.928) for the item "*I have the skill in access the Internet application or software that required for documentation or searching information*." and item *"I am able to participate in blended learning mode for classes."* (M= 5.56, SD= 1.1). Whereas, the lowest mean score is 4.40 (SD=1.141) was recorded for the item "*I am familiar with Processing of big data or big data analysis*" and item *"I have the skill in accessing spreadsheet to key in data that is required in the Industrial Revolution 4.0."* (M= 4.5, SD= 1.20). It appears that when it comes to technology skills, the students feel confident with common technology tasks, but perhaps require some help when the technology skills move to the more advanced ones such as big data analysis. This confirms that the Malaysian governments' initiative to produce high-tech TVET students is timely (Malaysian TVET Council, 2024).

Table 3
Communication Skills

	N	Mean	Std. Deviation
I am able to speak in English language proficiently.	169	5.24	1.065
I am able to listen and understand spoken English clearly.	169	5.63	1.056
I am able to write in English accurately.	169	5.40	.901
I am able to read and comprehend written English.	169	5.59	.848
I have the emotional maturity to regulate my emotions and impulses.	169	5.36	.941
I have cultural knowledge that allows me to be accepting to others.	169	5.59	.954
I have a sense of sensitivity to discuss about appropriate topics.	169	5.38	1.047
I am able to interact well with others with etiquette and courtesy.	169	5.39	.958
I am able to read social cues to determine others' emotions.	169	5.42	.923
I am able to provide the appropriate discourse for a situation accordingly.	169	5.14	.982
I am able to work well and collaborate with others.	169	5.67	.910
I am able to follow instructions and let others take a lead.	169	5.77	.951
I am able and willing to accept ideas from others.	169	5.90	.930
I am able to contribute to a group or organization to achieve a common goal.	169	5.90	.792
Overall mean	169	5.5266	.70352
Valid N (listwise)	169		

Scale 1-7

Adaptability Skills

The next construct, which is the adaptability construct is arguably relevant with the previous constructs. In this construct, it could be seen from Table 5 that the highest mean score of 5.66 (SD=0.969) is for the item *"I am willing to be flexible with others depending on the situation."*. This is highly in line with the previous findings, where the TVET students perceive that they have no problems working with other people. The second highest item in this construct is *"I am able to not give up in finding solutions after rejections."* (M= 5.52, SD= .995). In contrast, the lowest mean score is 4.74 (SD=1.231) for the item *"I am able to work autonomously or without much guidance from others.",* followed by item *"I have the ability to critically find solutions to any given problems."* (M= 4.95, SD= 1.34) and item *"I am able to work under pressure and manage my stress effectively."* (M= 4.95, SD= 1.29). The findings give an insight into the personality of the participants, where they could be seen as confident when it comes to working with others, but appears anxious when placed in high-pressure situations, such as working alone and working under pressure.

Table 4
Technology Skills

	N	Mean	Std. Deviation
I am able to participate in blended learning mode for classes.	169	5.56	1.095
I am aware of the demands of the Industrial Revolution 4.0	169	5.25	1.097
I am ready to apply technical skills in job task required during Industrial Revolution 4.0.	169	5.31	.988
I have the skill in access the Internet application or software that required for documentation or searching information.	169	5.64	.928
As a student, I use e-mail frequently to send or receive message or information by preparing to adapt the changes towards new technology 4.0.	169	4.88	1.138
I have the skill in accessing spreadsheet to key in data that required in the Industry Revolution 4.0.	169	4.50	1.235
As a student, I have the technical skill in handling presentations that will be useful towards Industry Revolution 4.0.	169	5.21	1.029
I understand the security issues such as data theft and cyber-security	169	5.15	1.118
I am familiar with Cloud computing (storage and processing of data in networked computers)	169	4.78	1.280
I am familiar with Processing of big data or big data analysis	169	4.40	1.141
I am familiar with Internet of Things (connecting physical objects to their virtual counterpart)	169	4.76	1.256
I am aware of the ethical usage of artificial intelligence	169	5.35	1.216
I am able to apply appropriate prompts for using artificial intelligence platforms effectively	169	5.19	1.113
Overall mean	169	5.0756	.72211
Valid N (listwise)	169		

Scale 1-7

Self-Efficacy Skills

When it comes to self-efficacy skills, the construct measures the students' self-belief in their own ability to succeed in a given situation. Table 6 shows that the highest mean score is 6.11 (SD=0.809) for the item "*I learn best by doing a task.*", followed by the item *"I am eager to learn about my field of work."* (M= 5.93, SD= .955). Meanwhile, the item of "*I make sure to plan my tasks ahead and not do them last-minute*." received the lowest mean score of 4.90 (SD=1.198), followed by the item *"I am able to work or begin a task without being told."* (M= 5.02, SD= 1.227). The findings seem to suggest that although the students are confident with their ability to carry out any tasks given to them, provided they are given guidance, and the right instructions to carry out the tasks.

Table 5
Adaptability Skills

	N	Mean	Std. Deviation
I am able to solve simple problems swiftly or on the spot.	169	5.15	1.033
I am able to adapt to unexpected or unanticipated situations.	169	5.14	.994
I am able to solve more complicated problems such as in situations that never occurred before.	169	4.90	.974
I have the ability to critically find solutions to any given problem.	169	4.95	1.138
I am able to work autonomously or without much guidance from others.	169	4.74	1.231
I am able to find root causes and aim to solve instead of blaming others or finding faults.	169	5.14	1.031
I am able to not give up in finding solutions after rejections.	169	5.52	.995
I am able to work under pressure and manage my stress effectively.	169	4.95	1.288
I am able to provide clear justification on the decisions I have made.	169	5.31	.989
I am quick to participate in contributing new ideas.	169	5.22	1.094
I am willing to be flexible with others depending on the situation.	169	5.66	.969
I keep my work station organized and tidy.	169	5.19	1.123
Overall mean	169	5.1528	.85880
Valid N (listwise)	169		

Scale 1-7

Leadership Skills

Table 7 indicates that the highest mean score recorded is 5.60 (SD=0.953) for the item of *"I am able to maintain healthy relationships with my peers."*, which was followed by item *"I am able to provide creative ideas to improve a project."* (M= 5.37, SD= 1.044) and item *"I am able to generate ideas in a group."* (M= 5.37, SD= 1.044). On the other hand, the lowest recorded mean score is 4.78 (SD=1.391) which involves the item of being open to volunteering to lead a group, followed by the item *"I am able to be assertive as a leader and demand expectations to be met."* (M= 5.14, SD= 1.102) and item *"I am accountable to mistakes whether my own or by others."* (M= 5.14, SD= .953). It is interesting to note that the although the students indicate high level of confidence in their overall leadership skills, they lack confidence with leadership skills that requires them to take up responsibilities and accountability. Again, the highest mean for the leadership skill construct confirms that the TVET students do not have any problems working with their peers.

Table 6
Self-Efficacy Skills

	N	Mean	Std. Deviation
I keep my work station organized and tidy.	169	5.19	1.123
I keep track of all the tasks I am given.	169	5.37	1.021
I am able to meet deadlines in a prompt manner.	169	5.31	1.058
I am usually very punctual or early to meetings.	169	5.30	1.079
I make sure to plan my tasks ahead and not do them last-minute.	169	4.90	1.198
I am able to organize my tasks based on priority.	169	5.54	.926
I always aim to look presentable to work.	169	5.66	.925
I am able to work or begin a task without being told.	169	5.02	1.227
I do not wait for others to begin a task before I begin mine.	169	5.32	1.093
I am willing to do beyond what was told or what is expected of me.	169	5.20	1.153
I am willing to ask questions about matters I do not know about.	169	5.52	1.124
I try to improve or enhance operational matters for everybody.	169	5.51	.933
I am eager to learn about my field of work.	169	5.93	.955
I learn best by doing a task.	169	6.11	.809
I have strategies on how I learn most effectively.	169	5.53	1.035
Overall mean	169	5.4264	.75891
Valid N (listwise)	169		

Scale 1-7

Table 7
Leadership Skills

	N	Mean	Std. Deviation
I am able to lead a group when the situation demands it.	169	5.30	1.079
I am open to volunteer to lead a group.	169	4.78	1.391
I am able to delegate tasks to others and manage them.	169	5.15	1.107
I am accountable to mistakes whether my own or by others.	169	5.14	.953
I am willing to step up to lead when others do not.	169	5.20	1.105
I try to involve myself in projects and events.	169	5.33	1.121
I am able to provide creative ideas to improve a project.	169	5.37	1.004
I am able to generate ideas in a group.	169	5.37	1.044
I am able to maintain healthy relationships with my peers.	169	5.60	.953
I am able to give clear instructions and have realistic expectations.	169	5.24	1.013
I am able to be assertive as a leader and demand expectations to be met.	169	5.14	1.102
Overall mean	169	5.2383	.83537
Valid N (listwise)	169		

Scale 1-7

Discussions and Conclusion

The findings in this article give insight on the profile of the TVET students that were involved in this study. The overall findings indicates that the students are the mostly confident in communication skill, and the least confident with their technology and adaptability skills. However, the dissection of each individual construct provides us a richer set of data to understand the students better. In essence, the TVET students indicate that they enjoy working with their peers but will shy away when they are pushed into a stronger leadership role. The findings suggest that they prefer to be led, rather than lead, especially when they are challenged to be more assertive and to take accountability as a leader. Another concern that was indicated in the findings that is relevant to this point is the students' inability to work under pressure, which is one of the strongest suits that an employer looks out for when hiring.

One suggestion that could help TVET graduates with the issues above is to re-examine the role of mentorship during internship programs in preparing the students for the future job market. Thessin, Clayton and Jamison (2020), think that internship help students to learn to communicate more effectively, work in teams, manage their time and learn to adapt to changing situations, which are critical skills in the industry now. However, what is even more crucial in an internship programme is the mentors' role. Thessin et al (2020) further elaborated that mentors can provide guidance, support, and feedback to help students develop their skills and knowledge during an internship. Future research could examine the mentoring styles of successful mentors in internship programs, to be emulated in other TVET internship programs, to help groom TVET students to become better leaders.

Secondly, the findings also suggest that the TVET students are confident with technology that are common to them, but the confidence level plunges when it comes to high-end technology skills such as cloud computing and big data analysis. Another aspect that appears to be lacking as the findings suggest, is the students' ability to speak proficiently in the English language. They seemed confident with their general communication skill, but not in their English-speaking abilities. Chen, Shen and Gosling (2018), shared similar views when they discuss how employers often find TVET graduates struggling to secure employment due to their lack of communication, adaptability, critical thinking and other soft skills. However, the data presented also points that these students are willing to learn and will be able to thrive if they are pointed in the right direction.

The issues discussed in the paragraph above indicates it is high time for curriculum designers to be mindful of the technological evolution experienced by the industry. One way to tackle this is by involving the industry in the TVET curriculum design process and/or TVET curriculum review. Currently, Ismail, Nopiah and Sattar (2018), assert that there is a lack of industry involvement in the design and delivery of TVET programs, leading to a gap between the skills taught in TVET institutions and the skills required by the industry (Ismail et., al, 2018). Ideally, a curriculum framework should be developed based on the strategic partnership with the industry (Ismail, Chik and Hemdi, 2021; Thomas, Jamaluddin and Abdullah, 2023). By getting the industry partners involved in the curriculum design and delivery, the TVET institutions will be able to produce students who meets the needs of the industry better, which in turn will contribute to a better TVET graduate employability rate.

In discussing issues regarding Graduate Employability (GE) skills, one salient contextual and theoretical contribution of this study is to examine the issue of graduate employability from the perspective of the graduates themselves. Current literature in the Malaysian context appears to lean more towards the curriculum design of TVET programmes in overcoming the issue of TVET GE rates (Omar, Ismail, Abdullah, Kadir & Jusoh, 2021; Kamarudin, 2022). Besides that, most research on TVET graduates GE skills appears to examine the graduates into measurable constructs, and losing the tangible explanation of how each construct can be examined further to give a more comprehensive understanding of the graduates. One salient theory that could further help to examine issue of GE skills among TVET graduates is the theory of self-efficacy by Bandura (1977). The theory discusses how it is instrumental for human beings perceive themselves to be a predictor of successful outcomes. In other words, in examining TVET GE skills, there must be an examination into how they view themselves as future industry workers. When doing so, perhaps better measures can be put in place, rather than coming up with solutions that are one-size-fits-all approach.

This paper has discussed the perception of TVET students on their GE skills. Although the TVET students were found to struggle with the technology, adaptability and leadership construct, it is worth noting that they are confident that they can prosper, if they are given the right tools and the right directions. Suggestions were made to re-examine the roles of mentors during internship programmes and the involvement of the industry in the process of curriculum design and delivery. TVET graduates are an asset to the work force, and efforts must be made to ensure that these graduates meet their maximum potential to contribute to the society and to the nation.

Co-author contributions

Author 1 was responsible for the overall write-up of this paper, Author 2 and 4 contributed in terms of the final discussions and language editing and Author 3 administered the survey and wrote the Literature Review.

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