Investigating the Impact of Online Learning Barriers on Soft Skills Development among TVET Students During the COVID-19 Pandemic: A Malaysian Perspective

Siaw-Han Yong[1], Ying-Leh Ling[2*] and Ghee-Whai Marcus Kho[3]

[1]School of Education, Humanities and Social Sciences, Wawasan Open University, 54, Jalan Sultan Ahmad Shah, 10050 Penang, Malaysia.

[2]Mathematics, Science and Computer Department, Politeknik Kuching Sarawak, Jalan Matang, 93050 Kuching, Sarawak, Malaysia.

[3]General Studies Department, Politeknik Kuching Sarawak, Jalan Matang, 93050 Kuching, Sarawak, Malaysia.

*Corresponding Author's Email: drlingyingleh@gmail.com
Article History: Received 13 June 2024; Revised 17 October 2024; Accepted 2 November 2024

Abstract

This quantitative, descriptive study investigates the impact of online learning barriers on the acquisition of soft skills in technical and vocational education and training (TVET) students. Specifically, it aims to assess the extent of these barriers and the mastery of soft skills among TVET students and to examine the relationship between these two factors. The study involved 1,140 students — 462 women and 678 men — enrolled in the first to fifth semesters of the Session I 2022/2023 diploma programme. The response rate for the online survey was 76.1%. Pearson's correlation analysis was conducted to analyse the correlation between online learning barriers and soft skills development. Preliminary results, indicated by Cronbach's alpha values of .937 and .963 for the two survey sections, suggest a nuanced impact of online barriers on soft skills learning, particularly in ethics, responsibility, leadership, and communication. Despite the presence of barriers at various levels, their impact on the development of soft skills in TVET students appears to be minimal. Nevertheless, the results suggest that entrepreneurial skills need to be more integrated into online learning platforms.

Keywords: Online learning; Barriers; Soft skills; TVET graduates

1.0 Introduction

The outbreak of the COVID-19 pandemic has significantly changed the education landscape globally, making online learning a crucial element of the education system. In Malaysia and around the world, this shift towards virtual classrooms has happened quickly and with great impact, challenging traditional approaches to education. The need for online learning, previously seen more in industrialised countries, has accelerated dramatically due to the pandemic, highlighting both the benefits and limitations of distance learning.

This transition to online platforms has brought various challenges, especially for students and teachers who have had to adapt to this new form of the learning environment. One major issue has been unequal access to technology, which has exacerbated pre-existing inequalities in education. In addition, the constraints of online interaction have hindered the development of important soft skills such as communication, leadership and problem-

solving, all of which are essential for professional success.

Considering these factors, this study aims to explore the relationship between the barriers to online learning and soft skills development among technical and vocational education and training (TVET) students amidst the COVID-19 pandemic. This investigation aims to understand the complex interactions that influence students' learning experiences in today's digital learning context.

2.0 Literature Review

Researchers such as Yeap, Suhaimi and Nasir (2021) have emphasised the importance of technical and vocational education and training (TVET) for the growth of fully developed high-income nations by equipping the labour market with skilled personnel. To strengthen TVET, the Malaysian government has established various training centres such as the Industrial Training Institute, the National Youth Skills Institute, the National Skills Institute, vocational colleges, and private training institutions.

The hurdle of online learning poses a major challenge to the development of soft skills in TVET students. These skills, including entrepreneurship and communication, are critical to the TVET curriculum, especially in sectors such as hospitality, where practical training is combined with soft skills development in ethics, leadership, and communication. Nevertheless, obstacles such as limited experience with real-life business scenarios due to societal barriers stand in the way of effective entrepreneurship education.

Novitasari et al. (2020) suggest that improving the innovation capacity of teachers in educational institutions requires participation in external activities such as training, seminars, workshops, and collaborations. However, the shift to online learning limits these opportunities and creates institutional barriers that compromise teaching effectiveness and student engagement in virtual environments.

With the shift to online teaching, subjects that require communication skills, especially in the hospitality industry, face major challenges. Studies by Mukarromah and Wijayanti (2021) show how online learning impacts hospitality students' communication skills, which are crucial for interacting with customers. Teachers report that online platforms do not provide the same level of experience and mastery in hospitality subjects where experiential learning and soft skills development are important.

The link between online learning barriers and soft skills acquisition in vocational students is profound, as many skills, such as communication, are best learnt in a hands-on environment. Patacsil and Tablatin (2017) emphasise the importance of teamwork and communication skills, yet the online format is not very effective in teaching these skills. Interestingly, Wildman et al. (2021) found that moving to online learning can sometimes have a positive effect on communication skills as teams are forced to improve collective understanding and coordination.

Teachers' competence in delivering online classes also plays a crucial role in overcoming institutional and technological barriers. The successful adaptation of teachers to online teaching methods has a direct impact on the effectiveness of online learning. Studies by Mukarromah and Wijayanti (2020) show that vocational students were not adequately taught soft skills in productive subjects due to the limitations of online learning.

The impact of online learning on teamwork is mainly affected by the lack of social interaction and technological challenges. Abd Aziz, Musa, and Abd Aziz (2020) found that lower social engagement hinders teamwork, which is essential for completing projects. Wildman et al. (2021) identified external factors such as distractions from home that negatively affect team coordination and goal achievement, highlighting the complex challenges teams face in online environments.

3.0 Research Methodology

3.1 Research Design

The subsection headings should be numbered in Arabic numerals such as Descriptive research aims to outline the specific characteristics of a population by collecting data to answer questions about the characteristics of the population without inferring causality. This approach examines the relationships between variables to highlight key aspects of phenomena. By using methods such as observations, interviews and surveys, this research can provide both quantitative and qualitative data. Quantitative research attempts to recognise patterns using deductive reasoning. Statistical methods are used to numerically analyse human behaviour using standardised questionnaires, often using random sampling. The strengths of quantitative research lie in its objectivity and the ability to manage and analyse large data sets for comparative and evaluative purposes. Cross-sectional studies, a form of observational research, provide a snapshot of a population at a specific point in time, which is beneficial for assessing risk factors across different demographic characteristics such as age and gender. This type of study is cost-effective, reduces errors by analysing variables simultaneously and lays the foundation for future research.

3.2 Research Population and Sampling

In research, the population refers to the entire group under investigation, which is often too large to capture in its entirety. Therefore, a sample — a smaller, representative group — is selected to generalise the results of the study to the wider population (Majid, 2018; Van den Broeck, Sandøy, & Brestoff, 2013). Sampling is crucial because it allows researchers to work with a manageable subset of the population (Kamangar & Islami, 2013; Browner et al., 1988). This study focussed on young adults aged 18 to 20 years attending TVET institutions in Sarawak. A sample was drawn from a technical education institution in Kuching, comprising 1140 students from 12 programmes (Session 2 2021/2022). Random sampling was used to select students from the Mathematics, Science and Computer Department for the survey, using the department's enrolment records for distribution.

3.3 Research Population and Sampling

In research, the population refers to the entire group under investigation, which is often too large to capture in its entirety. Therefore, a sample — a smaller, representative group — is selected to generalise the results of the study to the wider population (Majid, 2018; Van den Broeck, Sandøy, & Brestoff, 2013). Sampling is crucial because it allows researchers to work with a manageable subset of the population (Kamangar & Islami, 2013; Browner et al., 1988). This study focussed on young adults aged 18 to 20 years attending TVET institutions in Sarawak. A sample was drawn from a technical education institution in Kuching, comprising 1140 students from 12 programmes (Session 2 2021/2022). Random sampling was used to select students from the Mathematics, Science and Computer Department for the survey, using the department's enrolment records for distribution.

3.4 Research Instrument

The questionnaire used in this study consists of three parts. Part A collects demographic data, including gender, subject area, academic programme, and semester. Part B assesses the barriers to online learning that have arisen during the pandemic. It assesses technological, individual, domestic, institutional and community aspects on a four-point Likert scale. Part C assesses the impact of online learning on student competencies such as ethics, social responsibility, leadership, communication, and entrepreneurship using a six-point Likert scale. The items in Part B and Part C were adapted from Baticulon et al. (2021) and validated in a pilot study, resulting in Cronbach's alpha values of .937 and .963, respectively, indicating high reliability.

3.5 Research Analysis

The first two objectives of the study were analysed using descriptive statistics, including means, percentages, and standard deviations. This analysis aimed to quantify the extent of barriers to online learning and soft skills mastery among TVET students during the pandemic. The third objective, examining the relationship between online learning barriers and soft skills acquisition, was assessed through Pearson correlation analysis to determine the statistical significance of the relationship between these variables.

4.0 Research Findings and Discussion

4.1 Respondent Profile

The survey was completed by 1,140 diploma students from a TVET institution in Kuching, including 40.5% female and 59.5% male respondents from semesters 1 to 5. The majority were in the first semester (47.9%), with decreasing numbers up to the fifth semester. The subject areas represented included mechanical engineering (32.1%), civil engineering (27%) and electrical engineering (14.3%), as well as information and communication technology (9.7%), commerce (8.3%) and petrochemicals (8.5%). The response rate was remarkably high at 76.1%.

4.2 Descriptive Findings of Learning on Soft Skills

In the assessment of soft skills, ethics and social responsibility received the lowest score of 4.51 (SD = .889). Specifically, 9.2% of respondents felt that they had difficulty with responsibility when completing tasks during online learning and 14.4% had difficulty meeting deadlines. However, the vast majority, nearly 88%, reaffirmed their commitment to ethics.

Leadership and communication skills also received high marks, with a minimum score of 4.57 (SD = .919). About 10.2% of respondents reported difficulty in decision making and 14.9% found it difficult to express their opinions. Among the soft skills assessed, entrepreneurship scored the lowest. More than half of the respondents showed little interest in learning about entrepreneurship, citing lack of knowledge as the main reason. Nevertheless, around 74% knew how to find out about entrepreneurship.

Table 1: Descriptive findings on learning of soft skills (N=1140)

Item		Likert Scale						Mean	S.D.	Level
		1	2	3	4	5	6			
ESR1	I always complete a given task within the allotted time.	8 .7	31 2.7	126 11.1	285 25.0	356 31.2	334 29.3	4.71	1.122	AA
ESR2	I easily adapt to a given task.	11 1.0	32 2.8	160 14.0	363 31.8	371 32.5	203 17.8	4.45	1.081	AA
ESR3	I always keep ethics.	7 .6	14 1.2	121 10.6	370 32.5	398 34.9	230 20.2	4.60	1.001	AA
ESR4	I can take responsibility for performing tasks.	6 .5	14 1.2	85 7.5	336 29.5	392 34.4	307 26.9	4.76	1.002	AA
ESR5	I can work without supervision.	19 1.7	48 4.2	214 18.8	390 34.2	291 25.5	178 15.6	4.24	1.152	BA
ESR6	I am actively involved in community activities.	19 1.7	51 4.5	207 18.2	398 34.9	281 24.6	184 16.1	4.24	1.158	BA
LAC1	I can lead group members while performing tasks.	16 1.4	27 2.4	127 11.1	360 31.6	354 31.1	256 22.5	4.45	1.158	AA
LAC2	I can make a report on a given task.	2 .2	25 2.2	149 13.1	374 32.8	366 32.1	224 19.6	4.53	1.028	AA
LAC3	I can make decisions for my own good.	4 .4	16 1.4	96 8.4	330 28.9	404 35.4	290 25.4	4.74	.998	AA
LAC4	I dare to give an opinion.	16 1.4	27 2.4	127 11.1	360 31.6	354 31.1	256 22.5	4.56	1.109	AA
ETP1	I am interested in exploring the world of business.	20 1.8	42 3.7	161 14.1	349 30.6	319 28.0	249 21.8	4.45	1.183	AA
ETP2	I know the business.	39 3.4	80 7.0	242 21.2	400 35.1	242 21.2	137 12.0	4.00	1.223	BA
ETP3	I know how to get business information.	24 2.1	65 5.7	210 18.4	407 35.7	258 22.6	176 15.4	4.17	1.190	BA
ETP4	I got the exposure to be a successful entrepreneur.	32 2.8	68 6.0	235 20.6	395 34.6	257 22.5	153 13.4	4.08	1.206	BA
ETP5	I have skills in preparing a business plan.	51 4.5	102 8.9	239 21.0	408 35.8	232 20.4	108 9.5	3.87	1.240	BA
ETP6	I have experience following a basic business program.	74 6.5	103 9.0	232 20.4	329 28.9	247 21.7	155 13.6	3.91	1.380	BA

Note:
1-Strongly disagree, 2-Disagree, 3-Slightly disagree, 4-Slightly agree, 5-Agree, 6-Strongly agree
L-Low, BA-Below Average, AA-Above Average, H-High

4.3 Descriptive Findings of Learning Barriers

Analysis of barriers to learning, measured on a 4-point Likert scale, revealed that institutional barriers were perceived as the least problematic (mean = 2.15, SD = .711), indicating a lower level of concern. Respondents reported a higher workload in the online environment and fewer opportunities to interact with peers. Community barriers were also rated as low (mean = 2.49, SD = .766), with more than half of the respondents finding it difficult to study without interruptions. Domestic barriers were rated slightly higher, reflecting concerns about the financial burden of online learning on families and increasing household responsibilities. Technological barriers, rated as higher than average (mean = 2.47, SD = .740), were significant, with 64.1% of respondents reporting problems with Internet access. Individual barriers were also rated higher than average (mean = 2.41, SD = .753), highlighting difficulties adapting to the online learning style, the stress of using different technological tools and a lack of resources.

Table 2: Descriptive findings on learning barriers (N=1140)

Num.	Item	Likert Scale				Mean	S.D.	Level
		1	2	3	4			
Dimension: Technological Barrier						2.47	.740	AA
TB1	Lack of devices.	302 26.5	341 29.9	381 33.4	116 10.2	2.27	.966	AA
TB2	Limited access due to gadget sharing.	341 29.9	300 26.3	366 32.1	133 11.7	2.25	1.011	AA
TB3	Slow or no internet connection.	107 9.4	302 26.5	415 36.4	316 27.7	2.82	.942	H
TB4	Lack of technical skills.	182	390	464	104	2.43	.864	AA
TB5	Problems/Issues with the online learning platform.	151 13.2	366 32.1	440 38.6	183 16.1	2.58	.912	AA
Dimension: Individual Barrier						2.41	.753	AA
IB1	Difficulty adjusting learning styles.	126 11.1	396 34.7	496 43.5	122 10.7	2.54	.827	AA
IB2	Mental health difficulties.	292 25.6	276 24.2	376 33.0	196 17.2	2.42	1.049	AA
IB3	Physical health difficulties.	372 32.6	370 32.5	289 25.4	109 9.6	2.12	.974	BA
IB4	Stress and anxiety are faced with the use of gadgets.	214 18.8	345 30.3	367 32.2	214 18.8	2.51	1.000	AA
IB5	Learning facilities such as reference books and printers are available.	222 19.5	340 29.8	379 33.2	199 17.5	2.49	.995	AA
Dimension: Domestic Barrier						2.36	.742	AA
DB1	Limited space is conducive to learning.	199 17.5	367 32.2	428 37.5	146 12.8	2.46	.924	AA
DB2	Need to fulfil responsibilities at home.	84 7.4	246 21.6	475 41.7	335 29.4	2.93	.895	H
DB3	Conflicts within the family.	467 41.0	288 25.3	262 23.0	123 10.8	2.04	1.035	BA
DB4	Financial distress within the household.	331 29.0	362 31.8	322 28.2	125 11.0	2.21	.984	BA
DB5	Need to work for extra income.	359 31.5	265 23.2	280 24.6	236 20.7	2.35	1.127	AA
DB6	Lack of basic needs.	333 29.2	367 32.2	327 28.7	113 9.9	2.19	.970	BA

Table 2 (cont.)

Dimension: Institutional Barrier						2.15	.711	L
ISB1	Inadequate skills of lecturers.	324 28.4	476 41.8	298 26.1	42 3.7	2.05	.831	BA
ISB2	Poor quality of learning materials.	368 32.3	467 41.0	253 22.2	52 4.6	1.99	.853	BA
ISB3	Poor quality of learning materials.	380 33.3	452 39.6	257 22.5	51 4.5	1.98	.859	BA
ISB4	Poor communication between student and lecturer.	355 31.1	460 40.4	264 23.2	61 5.4	2.03	.870	BA
ISB5	Gaps in knowledge and skills from current teaching methods.	237 20.8	499 43.8	333 29.2	71 6.2	2.21	.840	BA
ISB6	The workload is far too much compared to when there were face-to-face classes.	142 12.5	352 30.9	419 36.8	227 19.9	2.64	.937	AA
ISB7	Limited opportunities to interact with peers.	165 12.5	409 35.9	414 36.3	152 13.3	2.49	.898	AA
ISB8	The lecturer ignored me.	646 56.7	305 26.8	156 13.7	33 2.9	1.63	.826	L
Dimension: Community Barrier						2.49	.766	AA
CB1	Frequent power cuts at my place.	280 24.6	480 42.1	298 26.1	82 7.2	2.16	.877	BA
CB2	Movement restrictions due to community lockdown.	144 12.6	297 26.1	426 37.4	273 23.9	2.23	.965	BA
CB3	It's hard to revise without being disturbed.	173 15.2	367 32.2	375 32.9	225 19.7	2.57	.971	AA

Note:
1-Strongly Disagree, 2-Disagree, 3-Slightly Disagree, 4-Slightly Agree
L-Low, BA-Below Average, AA-Above Average, H-High

4.4 Inferential Findings of Learning Barriers and Learning on Soft Skills

The correlation analysis between learning barriers and the development of soft skills showed significant correlation coefficients, especially between learning barriers and both ethics/social responsibility and leadership/communication skills. However, entrepreneurial skills were only significantly correlated with individual and institutional barriers (r = -0.069, SD = 0.020), suggesting that these areas are most affected by the challenges of online learning.

5.0 Research Implications and Conclusion

This study emphasises the critical importance of a strong digital infrastructure to improve the efficiency of online learning. It points to the need to significantly improve internet connectivity, accessibility, availability of devices and affordability within the nation's digital framework. Anastasakis, Triantafyllou and Petridis (2021) advocate the development of training courses aimed at providing students with the digital skills required for online teaching and promoting their independence in learning. This includes promoting skills in effective time management and the ability to learn independently.

The findings also suggest that the TVET curriculum successfully instils a sense of ethics and social responsibility in students, which is evident in their ethical approach to completing assignments. In addition, the study suggests that online learning has the potential to develop soft skills such as leadership and communication. It is recommended that the entrepreneurship module in the TVET curriculum should be tailored for online delivery with a focus on

ICT integration, encouraging active student engagement, designing effective teaching materials, and introducing constructive feedback mechanisms by instructors.

Furthermore, the study suggests that TVET institutions need to devise comprehensive strategies to ensure that they are ready for online learning. This includes training programmes for students to improve their employability in the post-COVID-19 era. Financial grants should be made available to both TVET students and businesses to meet labour needs and create a conducive learning atmosphere.

Acknowledgements
The authors would like to express sincere gratitude to all the respondents in this study for their valuable contributions.

Author Contributions
Siaw-Han Y.: Contributed to the research writing. **Ying-Leh L.:** Analysed and interpreted the data collected and provided critical comments throughout the implementation of the research. Contributed to the interpreting the result. Supervised the research. **Ghee-Whai Marcus K.:** Critically reviewed and edited the manuscript.

Conflicts Of Interest
The manuscript has not been published elsewhere and is not under consideration by other journals. All authors have approved the review, agree with its Submission and declare no conflict of interest in the manuscript.

References
Anastasakis, M., Triantafyllou, G., & Petridis, K. (2021). Undergraduates' barriers to online Learning During the Pandemic in Greece. *Technology, Knowledge, and Learning*, 1-18. https://doi.org/10.1007%2Fs10758-021-09584-5

Mukarromah, U., & Wijayanti, W. (2021). Implementation of online learning at vocational high school during Covid-19: Between obligations and barriers. *Jurnal Pendidikan Vokasi, 11*(1), 92-100. https://doi.org/10.21831/jpv.v11i1.37110

Novitasari, D., Yuwono, T., Cahyono, Y., Asbari, M., Sajudin, M., Radita, F. R., & Asnaini, S. W. (2020). Effect of hard skills, soft skills, organizational learning and innovation capability on Indonesian teachers' performance during the Covid-19 Pandemic. *Solid State Technology, 63*(6), 2927-2952.

Patacsil, F. F., & Tablatin, C. L. S. (2017). Exploring the importance of soft and hard skills as perceived by IT internship students and industry: A gap analysis. *Journal of Technology and Science Education, 7*(3), 347–368. https://doi.org/10.3926/jotse.271

Yeap, C., Suhaimi, N. and Nasir, M. (2021) Issues, challenges, and suggestions for empowering technical vocational education and training education during the COVID-19 pandemic in Malaysia. *Creative Education, 12*, 1818-1839. https://doi.org/10.4236/ce.2021.128138

Van den Broeck J, Sandøy IF, & Brestoff JR. (2013). *The recruitment, sampling, and enrollment plan*. Springer Netherlands.

Wildman, J. L., Nguyen, D. M., Duong, N. S., & Warren, C. (2021). Student teamwork during COVID-19: challenges, changes, and consequences. *Small Group Research, 52*(2), 119–134. https://doi.org/10.1177/1046496420985185