

## The Development of the Future Learning Skills for Graduates in TVET by using Focus Group Discussion

Irdyanti Mat Nashir<sup>1</sup>; Ramlee Mustapha<sup>2</sup>; Mohamad Amiruddin Ismail<sup>3</sup>, Siti Hafsyah Idris<sup>4</sup>, Nurul Nazirah Mohd Imam Ma'arof<sup>5</sup> & Rahayu Ahamad Bakhtiar<sup>6</sup>

<sup>1,2,3,5</sup> Faculty of Technical and Vocational, UPSI, Perak, 35900, Malaysia

<sup>4</sup> Faculty of Law, Universiti Teknologi MARA, Shah Alam

<sup>6</sup> Institut Aminuddin Baki, Bandar Enstek, Nilai.

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### ABSTRACT

*This study focuses on the domain to evaluate graduates' abilities in TVET system. The reason why this study conducted is to help graduates, university and other stakeholder to overcome the employability crisis among their graduates. Thirteen experts were participated in this Focus Group Discussion. The Focus Group Discussion is a technique used in identifying, discussing and brainstorming the criteria, domain and characteristics through experts' opinion. The approach used in this study is discussion by Webex platform. After analyzing the data findings in Focus Group Discussion using SPSS software, researcher found that out of thirteen, twelve domains reached a good consensus and agreement. This study is believed to encourage current undergraduates to develop high level future learning skills, competencies and other related abilities regarding their employability and foster training in this area by educational institutions so that can benefit their students.*

*Keywords: Employability skills; graduates; Focus Group Discussion; TVET; expertise*

### INTRODUCTION

Educational system in Malaysia follows a pattern such as primary, secondary and tertiary education. In this research context, researcher focusses on tertiary education which consists of Technical and Vocational Education. Nowadays, various ministries have been offering TVET program relating to Technical and Vocational Education such as Ministry of Human Resource, Ministry of Rural Development, Ministry of Youth and Sports, Ministry of Higher Education and Ministry of Education. All these stakeholders definitely will focus mainly on their graduates' employability. Thus, this study conducted to explore and find out those to evaluate graduates' abilities in TVET system by using Focus Group.

The unemployment issue that remains unsolved is getting worse to a higher rate caused mainly by the emerging pandemic Covid-19. It has given a powerful impact especially for those who lost their jobs and young people who are graduating from universities. Covid-19 issue has left severe lifelong scars which employment in several sectors are forcefully closed and disrupted including technology, engineering and TVET area. The economic crisis and bureaucratic issue are some of the factors that contribute to unemployment. Majority of new graduates are concerned about getting full-time employment and vacant position after they completed their studies if the issue is remained unsolved and worsening. Thus, it is very important for graduates to prepare themselves as the high-skilled and competent labours for any possibilities unprecedented economic crisis

in future. Next, one of the major component of any economy in the world is the job market. The mechanism is vital and undeniable because in fact, billions offer their skills and knowledge for livelihood and organizations need them to function in the process. That's why the labour market is critically needed and should not be left behind as employees and employers are complement each other in the supply-demand activity. Hence, it is the major component in the economic circle and linked with the capital market, goods and services.

Malaysia has experienced an economic boom and expanded growth performance when it has been successfully transformed the agriculture-based economy to an industrial sector. Since decades ago, Malaysia economic growth really shows an outstanding performance and the manufacturing sector has driven the rapid transformation. Besides, manufacturing sector in TVET seen as the main pillar in the national economic growth due to the capability of the sector to compete globally. The manufacturing sector has recorded the positive growth especially in year 1990s to date. Other than that, the manufacturing sector is believed to offer jobs opportunity, employ the excess supply of labour in agriculture sector, increase the output per capita and living standards and able to create changes from the aspect of social, culture and institution by effects of modernisation in methods and technology (Tütlys dan Spöttl 2017; Ellerman 2020). Therefore, to achieve high-income nation status by the year 2050, it is vital to shift the growth strategy which is from the input based to maximising the productivity.

Labour productivity is the determiner of countries rivalry in global market. Thus, to generate better national economic growth, human resource development is vital and should be paid more attention and put a lot of effort to transform it. Consequently, the more effective human resource development strategy should be done to increase the labor productivity. It is in line with the objective of economic growth via improvement in productivity growth. (Zulkifly 2011; Noorasiah 2012; Aliya 2012; Awad et al. 2018; Ho 2019; Yusof dan Kalirajan 2020; Gani dan Bahari 2021).

Generally, the labour productivity in Malaysia shown improvement from 1.8 percent increased to 2.8 percent in 2000-2005. However, our national labour productivity is still low and unsatisfied if comparing to China, Korea and Singapura. While having comparison with countries such as Filipina, Vietnam, Thailand and Indonesia, Malaysia is considered at high level of labour productivity (Labour and Social Trends in ASEAN, 2007). Even though our country shows higher labour productivity than those countries, but the gap on the graph is getting closer and smaller. So, looking at the latest progress and performance, will Malaysia able to achieve the developed country status by 2050? Hence, the research is reasonable to be executed in order to provide a plan and checklist for graduates and publics

who involve in TVET in Malaysia as the preparation to go through unknown future challenges, instead of the crisis of Covid-19. Besides, this research also provides the elements that need to be in every graduates so that they can cater the challenge while working and hunting jobs process soon. Thus, answering back the question, this research is to study the needs of new labour market especially among TVET graduates and their contributions toward national economic growth and TVET itself. As a result, the main objective is to identify the elements in the future learning skills domain among TVET graduates in Malaysia.

METHODOLOGY

RESEARCH APPROACH

Considering the Future Learning Skills (FLS) and the types and sources of information required to construct the FLS, document analysis, focus group discussion and survey research were chosen as the main methods of acquiring and analyzing the necessary input in this study. Figure 1 shows the Methodology Approach of the research and outcomes.

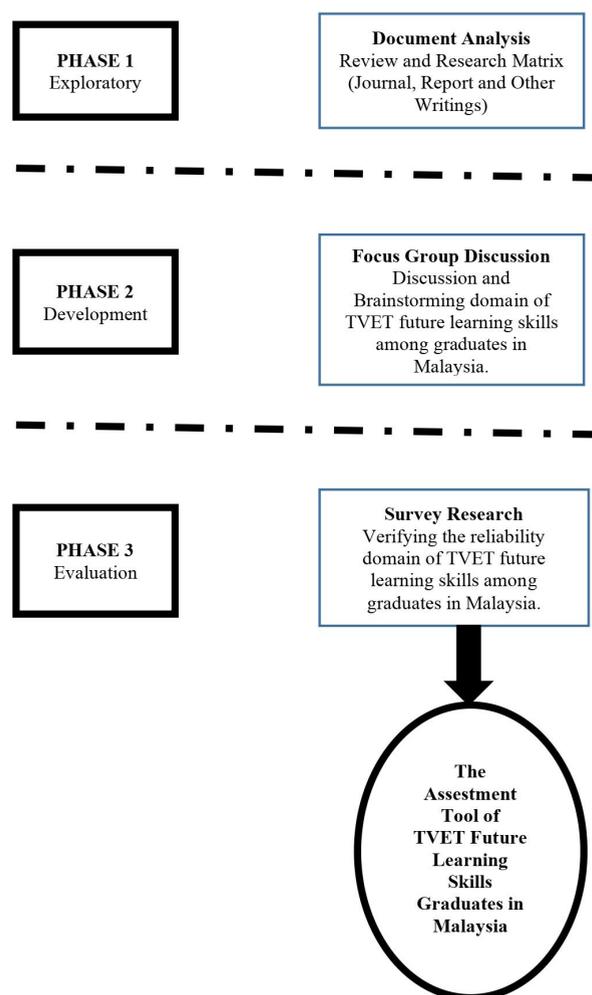


FIGURE 1. Methodology Approach in Future Learning Skills

## EXPLORATORY: DOCUMENT ANALYSIS

This method requires a thorough assessment of existing literature that answers a specific question. The review searches, identifies, chooses, appraises, and summarizes relevant research evidence in a systematic, reproducible, and bias-free manner. A document analysis is more thorough than a literature review since it incorporates both published and unpublished material. Gray literature is a vital part of a systematic review that adds value to it. This is due to the fact that gray literature is frequently more current than published literature and is more likely to be free of publication bias. A few examples of gray literature are unpublished studies, reports, dissertations, conference papers and abstracts, and governmental research. This method is intended to give a broad overview of the Future Learning Skills (FLS) which is focus on students in TVET system.

## DEVELOPMENT: FOCUS GROUP DISCUSSION

A Focus Group Discussion (FGD) with development panel members was held to assure the findings obtained during

document analysis, review the draft survey research so that the agencies and industries response could be gauged, and obtain agencies and industries intelligence information such as issues and challenges, as well as the implementation of Industry 4.0. This is because essential information, particularly for the industrial intelligence segment, is not available in the literature. Here is the five - point scales used which are 1= strongly disagree, 2=disagree, 3= neither agree nor disagree, 4=agree and 5= strongly agree.

During the literature review, facts collected were reviewed and presented to members who are representatives from diverse agencies and industries sectors in focus group workshop sessions to review, consensus and agreement. Table 1 is a list of 13 participants involved in the Focus Group Discussion which includes possess expertise in teaching and learning, psychometric, human behavior, employability and industries.

Additionally, initial information was gathered through Focus Group Discussions on domain of Future Learning Survey (FLS). The focus of the analysis was on the industry overview, occupational structure, and in-demand skills.

TABLE 1. List of Focus Group Discussion Panel Members

NO	EXPERIENCES/years	POSITIONS	ORGANISATION
1	10	Director	Government Agency
2	15	HR Manager	Industry
3	7	Senior Lecturer	University
4	7	Managing Director	Industry
5	10	Head of Department	Government Agency
6	11	Senior Lecturer	University
7	14	Coordinator	Government Agency
8	13	Deputy Director	Government Agency
9	8	Head of Department	Government Agency
10	9	Head of Market and Product Strategy	Industry
11	10	Coordinator	Industry
12	11	Professor	University
13	6	Senior Lecturer	University

Members of the Focus Group Discussion also considered as the core development panel members for this research, were in hand with the facilitator in producing the draft survey in the second Focus Group Discussion held on the 14 August 2021. Due to this Covid 19 pandemic situation,

industry engagement sessions involving industry players, government agencies and content experts set scheduled dates, platforms and activities and they were as shown in Table 2:

TABLE 2. List of Agencies and Industries Engagement Sessions

NO	DATE	PLATFORM	ACTIVITY
1	07-Aug-21	Webex	Briefing to the panel on publishing activities
2	14-Aug-21	Webex	Discussion and brainstorming of items in the survey (Round 1 for the Survey)

Besides identifying the domain for the FLS in this FGD phase, FGD also acquires opinion and review on the importance of FLS. By the interview with all 14 FGD experts, data obtained was transcribed and arranged according to the relevant theme. Below is the findings on the importance of TVET in realizing the Industrial Revolution 4.0 comes true

1. To supply labor force based on the needs (Expert 2; Expert 9; Expert 10)
2. To develop knowledgeable and high-skilled human being (Expert 4; Expert 7; Expert 8)
3. To bring out competent workers who are able to create new job opportunities by benefiting their skills (Expert 1; Expert 2; Expert 5)
4. To establish Malaysia as the technologically advanced country, not only as a user but as a creator (Expert 3; Expert 6)
5. To create “fusion skill” (Expert 8; Expert 11)
6. To construct the Democratization of work and learning (Expert 5; Expert 9; Expert 10)
7. To build Multi-skilled and versatile teams (Expert 3; Expert 7; Expert 11)
8. To produce soft skills and tech-related competencies) (Expert 1; Expert 4; Expert 6)

EVALUATION: SURVEY RESEARCH

A survey was utilized to gather the four important pieces of information for this study which are a domain of Future Learning Survey (FLS). A survey was also used to compile the results of the document analysis and focus

group discussions. Then, the survey was conducted using a Google form. Next, the survey was sent to the appropriate organization at the appropriate level. The evaluation phase in the third round demonstrated data from the five-point likert scale previously to be analyzed using factor analysis. This analysis from the SPSS software portrayed the value of good fit item in the same time developed domain of TVET FLS. These findings are believed to contribute in the social development, intellectual, spiritual, emotional and physical of a student in line with the development of Education Revolution in future and in 21<sup>st</sup> century education in Malaysia.

POPULATION AND SAMPLING

A population is the group of people, animals, or achieves that you are interested in examining. A population also might be defined as the characteristics of residency, occupation, gender, age and time frame. In this research the researcher will focus on respondents and industries stakeholders who possess expertise in teaching, learning and employability issue. Meanwhile, sampling is a procedure used to obtain the sample. The extent to which a sample actually represents the population is dependent on the amount of bias in the sampling procedure. The sampling used in this research was cluster sampling which is a type of probability sampling in which groups or clusters are randomly selected instead of individuals. In this research, respondents in FLS will be grouped based agencies (Figure 2 and Figure 3).

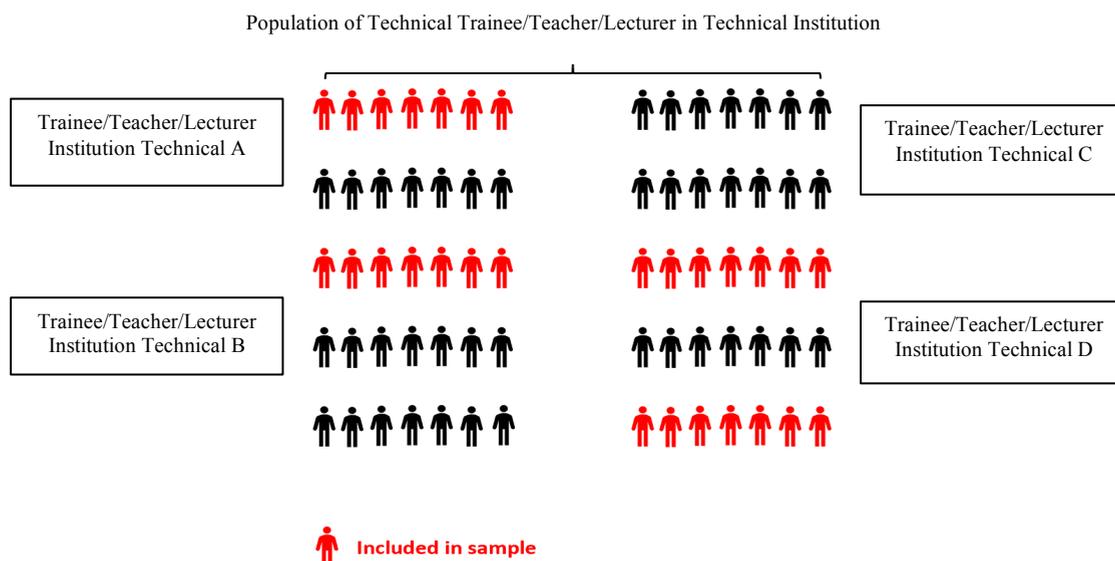


FIGURE 2. Population of Technical Trainee/Teacher/Lecturer in Technical Institution

DEVELOPMENT: FOCUS GROUP DISCUSSION

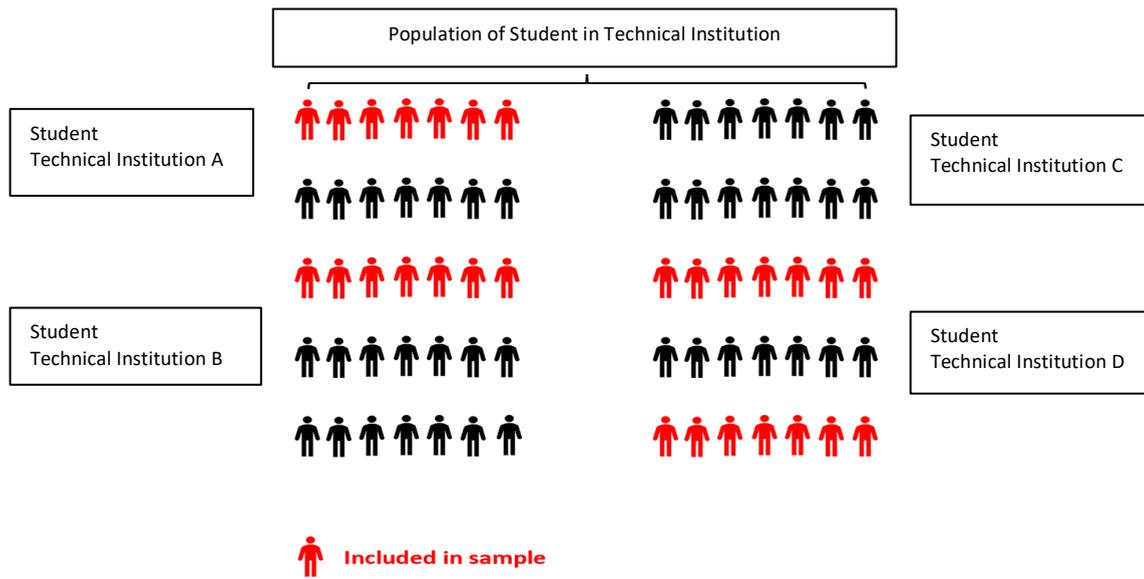


FIGURE 3. Population of Students in Technical Institution

FINDING AND DISCUSSION

Regarding to the Figure 4 that was the exploratory phase indicates the importance, needs, development and document analysis that had been arranged in a form of checklist. The total of 18 domains had been collected from journals, articles and others sources. Those domains are in model of Holland (1985); Anna Davies, Devin Fidler, Marina Gorbis (2011)

and Stephanie Lukins (2019). These domains were arranged in a checklist and distributed by email and WhatsApp prior a week before the real Focus Group Discussion by Google Meet was conducted. Table 4 shows the details on document analysis and experts' opinion in a round of FGD within the exploratory phase. This phase also discusses and obtains the experts' opinion on the needs and importance of TVET in Malaysia as explained in Table 3.

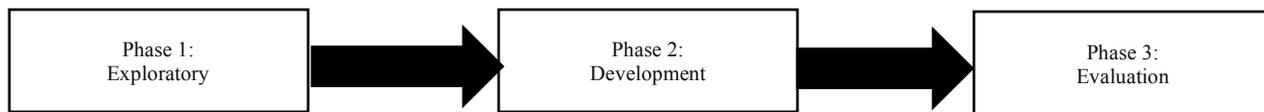


FIGURE 4. Flow Process of the Research Approach

TABLE 3. Analysis Summary of Focus Group Discussion

Bil	Domain		
Analysis Document			
1	<i>Motor Skills / Manual Dexterity Testing- Realistic Skills</i>	√	√
2	<i>Investigative Skills</i>	√	√
3	<i>Artistic Skills</i>	√	√
4	<i>Social Skills</i>	√	√
5	<i>Conventional Skills</i>	√	√
6	<i>Enterprising Skills</i>	√	√
7	<i>Cross-Cultural Competency</i>	√	√
8	<i>Virtual Collaboration</i>	√	√
9	<i>Design Mindset</i>	√	√
10	<i>Active Learning</i>	√	√
11	<i>Fluency of ideas</i>	√	√

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12	<i>Workplaces Learning</i>	√	√
13	<i>Collaborative Learning</i>	√	√
14	<i>Creative and innovative mindset</i>	√	√
15	<i>Emotional and social intelligence</i>	√	√
16	<i>Judgment and decision-making</i>	√	√
17	<i>Digital literacy and computational thinking</i>	√	√
18	<i>Cognitive flexibility</i>	√	√
Expert Suggestion during FGD			
19	<i>Learning Compass</i>		√
20	<i>Critical Thinking</i>		√
21	<i>Problem Solving</i>		√
22	<i>Adaptability Skills</i>		√
23	<i>New-Media Literacy</i>		√
24	<i>Social Intelligence</i>		√
25	<i>Transdisciplinary Knowledge</i>		√
Total Domain		18	25

## THE EXPLORATORY FACTOR ANALYSIS (EFA)

After the research survey distributed successfully to all respondents, every item was analysed using SPSS Software to obtain the value of correlation between domains that achieve consensus by the experts. This is the evaluation phase. The statistics analysis used to verify the validity of the constructs and items was the Exploratory Factor Analysis (EFA). Before EFA conducted, Kaiser-Meyer-Olkin (KMO) and Bartlett test were carried out earlier to indicate all those factors. In KMO test, the high values (close to 1.0) generally indicate that a factor analysis may be very useful with data. While, in Bartlett's test, small values (less than 0.05). The findings are the KMO measure of sampling adequacy was 0.954 and the Bartlett's test of sphericity was less than 0.001, which means EFA could be used on the data set because the tests showed all the underlying factors and variables were useful and related in this research. Hence, both tests verifying all factors and variables. The EFA was

conducted with the data obtained to extract the new factor's structure and to study the validity of the constructs. Factors were extracted by maximum-likelihood method and varimax rotation. The number of factors indicated the scree plots, cumulative variance explained, interpretation and Kaiser criterion. (Albuquerque et al. (2019); Goodman dan Santos (2006); Wiktorowicz (2017)).

## INTERNAL CONSISTENCY

One of the most well-known estimates of internal consistency is Cronbach's Alpha. Generally, if the internal consistency is considered high, then all extracted factors have good internal selection too. According to the Table 4, three items was removed because those items had loading factor values which less than 0.5 ((Bonnafous and Kryvobokov 2011; Dhall 2019). The three items that was removed was social skills, new media literacy and design mindset.

TABLE 4. Analysis Summary of Focus Group Discussion

No	Domain	Initial	Extraction
1.	Active Learning	1.000	.961
2.	Motor Skills / Manual Dexterity Testing- Realistic Skills	1.000	.946
3.	Fluency of ideas	1.000	.934
4.	Judgment and decision-making	1.000	.930
5.	Cognitive flexibility	1.000	.912
6.	Critical Thinking	1.000	.906
7.	Emotional and social intelligence	1.000	.881
8.	Digital literacy and computational thinking	1.000	.872
9.	Problem Solving	1.000	.858
10.	Virtual Collaboration	1.000	.836
11.	Social Intelligence	1.000	.830

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12.	Transdisciplinary Knowledge	1.000	.821
13.	Collaborative Learning	1.000	.819
14.	Adaptability Skills	1.000	.815
15.	Conventional Skills	1.000	.788
16.	Creative and innovative mindset	1.000	.780
17.	Cross-Cultural Competency	1.000	.759
18.	Workplaces Learning	1.000	.752
19.	Investigative Skills	1.000	.705
20.	Enterprising Skills	1.000	.675
21.	Learning Compass	1.000	.667
22.	Artistic Skills	1.000	.623

Table 5 that the value of communalities for each domain that focus on FLS TVET for graduates. Regarding to this table the domain of Active Learning is the higher reliability than others domain. The value of Active Learning was 0.961, this is means that the value of communalities of active learning is the 96.1% which is the high reliability

value because the values was > 50% regarding to the rule of thumb of this consistency. Regarding to this outcome, student was encouraged to active in their teaching and learning so that the student will take more opportunity than other students.

TABLE 5. Domain Value fits Eigenvalues

Domain	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.719	30.539	30.539	6.719	30.539	30.539	4.469	20.313	20.313
2	3.203	14.561	45.100	3.203	14.561	45.100	3.188	14.492	34.805
3	2.245	10.203	55.303	2.245	10.203	55.303	2.573	11.697	46.503
4	1.808	8.218	63.521	1.808	8.218	63.521	2.321	10.549	57.052
5	1.694	7.702	71.223	1.694	7.702	71.223	2.022	9.191	66.243
6	1.375	6.252	77.475	1.375	6.252	77.475	1.972	8.962	75.206
7	1.027	4.669	82.143	1.027	4.669	82.143	1.526	6.938	82.143
8	.819	3.721	85.865						
9	.594	2.699	88.564						
10	.562	2.554	91.118						
11	.460	2.091	93.209						
12	.359	1.631	94.840						
13	.330	1.502	96.342						
14	.212	.962	97.304						
15	.186	.844	98.148						
16	.121	.552	98.701						
17	.089	.407	99.107						
18	.079	.358	99.465						
19	.055	.251	99.715						
20	.039	.176	99.891						
21	.024	.109	100.000						
22	.022	.110	100.000						

Extraction Method: Principal Component Analysis.

Table 6 indicates 7 out of 22 domains that represent a good consistency value. The value of initial eigenvalues must exceed value one. Variants obtained by domain 1 is  $6.719/22 \times 100\% = 30,539$ . Next, domain 2 indicates  $3,203/22 \times 100\% = 14, 561$  and domain 3 is  $2.245/22 \times 100\% = 10.203$ . Hence, 7 out of 22 domains hit the good consistency in FLS TVET for graduates.

TABLE 6. Component Matrix

	Component						
	1	2	3	4	5	6	7
1. Judgment and decision making	.803	.039	.089	.068	-.490	.172	.040
2. Digital literacy and computational thinking	.783	-.326	-.341	-.103	-.059	.129	.074
3. Problem Solving	.769	-.093	-.384	-.236	.175	-.001	.156
4. Transdisciplinary Knowledge	.732	.221	-.008	-.430	.219	-.053	.045
5. Collaborative Learning	.675	.035	-.158	.280	-.007	-.104	-.497
6. Active Learning	.661	-.323	.544	-.311	-.160	-.019	.027
7. Workplaces Learning	.620	-.198	-.340	-.026	-.282	.357	.068
8. Virtual Collaboration	.524	.238	.365	-.302	.429	.051	-.305
9. Creative and innovative mindset	.506	-.674	.018	.077	.148	-.203	.003
10. Cognitive flexibility	.622	-.663	.033	-.142	.114	.152	-.167
11. Adaptability Skills	.433	-.596	.147	.338	.308	-.004	.206
12. Enterprising Skills	.441	.581	.093	-.132	.281	-.157	.116
13. Learning Compass	.475	.549	-.265	.094	.125	.213	.016
14. Investigative Skills	.316	.495	.314	.283	.225	.019	-.362
15. Emotional and social intelligence	.479	.484	-.458	-.242	.299	-.038	.242
16. Motor Skills / Manual Dexterity Testing- Realistic Skills	.305	.209	.731	-.294	-.339	-.179	.205
17. Cross-Cultural Competency	.470	-.019	.560	.336	.164	.289	-.024
18. Artistic Skills	.302	.391	-.125	.463	-.096	.371	-.045
19. Conventional Skills	.474	.386	.088	.109	-.598	.156	.115
20. Fluency of ideas	.525	.309	.004	.284	-.121	-.650	.212
21. Critical Thinking	.543	-.167	-.208	.468	-.117	-.547	-.092
22. Social Intelligence	-.015	-.023	.280	.505	.428	.222	.513

Table 7 shows 22 that have correlation with seven domain that have value greater than 1. For example, domain *Investigative Skills* has the correlation value of 0.783 for domain 1, value -0.326 for domain 2, value -0.341 for domain 3, and value -0.103, -0.59, 0.129, and 0.074 for domain 4, 5, 6 and 7.

TABLE 7. Rotated Component Matrix

	Component						
	1	2	3	4	5	6	7
1. Cognitive flexibility	.938	-.005	.012	.098	.124	-.070	-.038
2. Creative and innovative mindset	.807	-.064	-.159	.063	-.009	.286	.111
3. Digital literacy and computational thinking	.771	.350	.353	-.015	-.100	.114	-.087
4. Adaptability Skills	.693	-.091	-.087	.004	.045	.205	.524
5. Emotional and social intelligence	.009	.912	.144	-.130	-.018	.098	-.032
6. Transdisciplinary Knowledge	.343	.733	.066	.314	.217	.029	-.126
7. Enterprising Skills	-.153	.676	.042	.233	.318	.171	.089
8. Problem Solving	.611	.654	.176	-.020	-.065	.133	-.065
9. Learning Compass	-.065	.592	.456	-.156	.272	.061	.052
10. Conventional Skills	-.082	.120	.768	.373	.036	.177	-.077

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11.	Judgment and decision-making	.408	.139	.727	.397	.105	.204	-.071
12.	Artistic Skills	-.104	.121	.645	-.220	.293	.071	.206
13.	Workplaces Learning	.565	.200	.598	-.047	-.142	-.036	-.103
14.	Motor Skills / Manual Dexterity Testing- Realistic Skills	-.090	.050	.092	.954	.102	.072	.012
15.	Active Learning	.605	.033	.074	.750	.161	.001	-.019
16.	Investigative Skills	-.170	.161	.159	.067	.764	.157	.110
17.	Virtual Collaboration	.223	.446	-.128	.315	.671	-.143	-.041
18.	Cross-Cultural Competency	.278	-.067	.246	.298	.536	-.022	.490
19.	Collaborative Learning	.412	.129	.319	-.152	.528	.424	-.223
20.	Critical Thinking	.372	.007	.140	-.095	.089	.855	-.029
21.	Fluency of ideas	-.038	.332	.142	.256	.055	.853	.075
22.	Social Intelligence	-.028	.002	-.014	-.050	.043	-.018	.908

TABLE 8. Component Transformation Matrix

Component	1	2	3	4	5	6	7
1	.619	.467	.403	.262	.283	.296	.015
2	-.752	.499	.284	.058	.308	.055	-.056
3	-.093	-.335	-.166	.752	.408	-.122	.324
4	-.088	-.400	.317	-.393	.226	.488	.536
5	.125	.412	-.603	-.338	.361	-.156	.427
6	.110	-.054	.512	-.178	.101	-.794	.225
7	-.085	.296	.058	.248	-.684	.036	.610

Regarding to the Table 8 indicates Component Transformation Matrix which is the value of component 1, component 2, component 6 and component 7 were more than 0.5 but the value of component 3, component 4 and component 5 were less than 0.5. This means that only component 1, component 2, component 6 and component 7 have a good domain in transformation matrix.

#### CONCLUSION

Based on the research objectives, this study was came out with a reliable and valid checklist. In addition, the research used the Focus Group Discussion in developing

the checklist. The technique underwent two round of discussion with those expertise. The first round began with the attached 18 constructs. However, at the final round after all processes done, there were 22 out of 25 final constructs selected. Then, these remaining constructs were analyzed using the Exploratory Factor Analysis (EFA) to acquire the value of validity and reliability between domains in the checklist. Based on this Table 9, it can be concluded that the most important FLS arrangement that needs to be applied by graduates in facing the opportunities and challenges of working time in the future. This arrangement is based on the values that have been obtained from the EFA statistical analysis that has been done.

TABLE 9. Reliability of Future Learning Skills Domain

	Domain	Reliability
1.	Active Learning	.961
2.	Motor Skills / Manual Dexterity Testing- Realistic Skills	.946
3.	Fluency of ideas	.934
4.	Judgment and decision-making	.930
5.	Cognitive flexibility	.912
6.	Critical Thinking	.906
7.	Emotional and social intelligence	.881
8.	Digital literacy and computational thinking	.872
9.	Problem Solving	.858

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10.	Virtual Collaboration	.836
11.	Social Intelligence	.830
12.	Transdisciplinary Knowledge	.821
13.	Collaborative Learning	.819
14.	Adaptability Skills	.815
15.	Conventional Skills	.788
16.	Creative and innovative mindset	.780
17.	Cross-Cultural Competency	.759
18.	Workplaces Learning	.752
19.	Investigative Skills	.705
20.	Enterprising Skills	.675
21.	Learning Compass	.667
22.	Artistic Skills	.623

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