

Sustainable System for TVET Teacher Education Program in Malaysia: Fuzzy Delphi Method

Nor Hidayah Hamdan^{1*}, Jailani Md. Yunos¹, Lai Chee Sern¹

¹Faculty of Technical and Vocational Education,
Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, Johor, MALAYSIA

*Corresponding Author

DOI: <https://doi.org/10.30880/ojtp.2020.05.01.002>

Received 10th December 2020; Accepted 28th February 2020; Available online 31th March 2020

Abstract: The purpose of this paper is to obtain an expert consensus on the criteria of a sustainable system for the TVET Teacher Education program in Malaysia. The sustainable system for TVET Teacher Education program in Malaysia involves item related to the three main systems identified in the previous phase, namely program system, management system, and support system. Nine experts from three leading players in TVET Teacher Education program, which is the TVET Teacher Education institution, the government and the industry was chosen to do the verification through a questionnaire containing 25 items. The consensus from the experts was further analyzed using the Fuzzy Delphi Method. The study found that expert consensus on the criteria for a sustainable system of TVET Teacher Education program is more than 75% with a total of 24 items having a threshold value (d) ≤ 0.2 . The items were then sorted by priority, referring to the Fuzzy Score of each item based on the Defuzzification process. Overall, the sustainable system of TVET teacher education program will influence the quality of TVET Teacher Education graduates, which is the TVET teacher who will contribute to the quality of TVET workers in the future. Therefore, all players need to work together towards the sustainability of the program.

Keywords: Sustainability, TVET Teacher Education, Fuzzy Delphi Method

1. Introduction

The sustainability of the educational programme is affected by the revision and improvement made by the authority based on the current and future requirements. The unchanging curriculum may lead to unsustainable education since future workplaces require different knowledge and skills. The sustainable development design for learning also aims to contrast the existing paradigm of learning in public education settings with a more holistic and ecological model that emphasized the importance and awareness of human potential and interdependence of social, economic and ecological wellbeing (Medrick, 2013). Therefore, it can be concluded that sustainability requires changes in the current system with the consideration of the society, economy and ecological requirement.

The teacher education program is not excluded from the need to be sustainable. It means the program has to be able to survive with time and producing quality graduates. The teacher education program is a specific educational program aiming to provide a teacher in any related field. In Technical and Vocational Education Training (TVET), the teacher education program in particular to the area since different skills, knowledge and attitude are required in producing competent workers for future development. Grollmann and Rauner (2007) believed that teachers and trainers from the Vocational Education and Human Resources Development contributed to the development of the skills workers who are

*Corresponding author: nhidayahh@gmail.com

the backbone of each economy worldwide. Therefore, the TVET Teacher Education (TVET TE) program aims in producing TVET educators that can prepare or improve students for real work situation and requirement.

Nevertheless, the TVET Teacher Education programme needs to be revised so that the training provided for the future TVET educators may be able to help the country to achieve its mission and vision to be a developed country with high income by providing high quality TVET educators. This, at the same time, will revamp the perception of the opportunity that TVET may provide especially economically. The Malaysian Education Blueprint (Higher Education) also stated the need for the country to move the higher education system from a primary focus university education as the sole pathway to success towards the equal valued pathways between academic and TVET where TVET is also considered as a pathway to success (Ministry of Education Malaysia, 2015a). It is also as an effort to fulfil the National Education Philosophy in producing a teacher that is intellectually, spiritually, emotionally and physically balanced and harmonious (Ministry of Education Malaysia, 2015b) that is conjunction with the requirement of the 21st Century. Within all these policies, changes in the policy can be seen happen rapidly in recent years which according to Somekh, Lee, and Ahmad (2011) could be disruptive and ushering in new demands as well as new opportunities. The unstable educational system leads to confusion within the teaching and learning process.

In this paper, the study was part of bigger research in TVET Teacher Education that focuses on the sustainability of the program. The research began with the exploration of domains and elements through qualitative method followed by expert verification. This paper discussed the expert verification output for one of the domain, which is the sustainable system. Based on the Qualitative output, the domain of sustainable system consist of three main elements, which is the management system, program system and support system. This paper will further discuss the expert consensus on each elements.

2. Development of TVET Teacher Education Programme

Based on all this sustainable development issue of teacher education program, it is questionable does TVET Teacher Education programme require different sustainable development element than Teacher Education in general. Goodine (2010) answer this question in his paper by stated that

“ The attributes desirable in TVET teachers are identical with those of all college teachers: intelligence, a genuine interest in developing students, personal and professional integrity, a capacity for communicating ideas in oral and written form, a thorough knowledge of the subjects taught and of relevant supporting subjects, and skill in the fundamental of teaching-learning process. Where TVET requires special consideration is for faculty members teaching in the technical specialities to have appropriate technical qualifications and skills, and they need to remain current in developments in their field of specialization and keep pace with changing technology. They must stay alive in their field of specialization, and this presents a challenge that can sometimes be met by industrial attachments or updating programs.” pg 248-249

The sustainability of the technical skills and qualifications requires TVET teachers to have different preparation and medium in doing so. This is the reason why most of the TVET TE programme sustainability requires the partnership with industries and collaboration internationally (Goodine, 2010; Khambayat & Majumdar, 2010; Majumdar, 2011; Razzaly, 2010; Spöttl, 2009; Yunos, Esa, Jamil, & Rosli, 2010). The knowledge transfer among all stakeholders in TVET TE programme will eventually help in maintaining the dynamic of the programme. The collaboration will also be allowed the industries to use the institutions' laboratory for experiment and research and improve the quality of the teacher training in return (Razzaly, 2010).

In due time, Malaysia, in its quest of mainstreaming TVE in the educational perspectives, needs to seriously address the problems related to this field which a few have been discussed above. With this intention, the 10th National Plan had highlighted that TVET teachers are required to be more productive with high quality. Then, in the latest National Plan, the 11th National Plan that will take place from 2016 till 2020, the professional development of TVET teachers is also emphasized as part of the government effort to enhance the quality and delivery of TVET programme which will increase the employability of TVET graduates (Economic Plan Unit, 2015). This indicates the importance of the quality and performance of TVET teachers in the development of TVET future for Malaysia. Nevertheless, the TVET teacher education programme itself must be able to fulfil the requirement of the National Plan.

On the other hand, previous researches and existing TVET-TE program models had indicated several common elements of the system that contribute towards the sustainability of the program. Among them are real situation training system (Majumdar, 2010; Schell et al., 2013; SEAMEO Innotech Regional Education Program, 2010), contribution of partner through collaboration at local and international level (ASEAN University Network, 2006; Ratnavadivel, Hoon, Salih, & Low, 2014; SEAMEO Innotech Regional Education Program, 2010) and effective communication system (Goodine, 2010; Schell et al., 2013; Yunos et al., 2010). The development of the technologies notably influences all these elements. Thus, the technology itself is an important element towards the sustainability of TVET-TE program. (Blaschke & Hase, 2016; Thompson, Schmidt, & Davis, 2003; Zozimo, 2016).

3. Research Method

This research is the second part of bigger research regarding the sustainability of TVET TE program. It is attempted to propose a sustainable system for TVET TE using Fuzzy Delphi Method (FDM). The FDM was used to screen the essential criteria categorized by three dimensions: program system, management system and support system, which are based on the result of qualitative analysis through experts' consensus. Fuzzy Delphi Method is a combination of the traditional Delphi Method with Fuzzy Theory. FDM will be used since it can solve the disadvantages of the conventional Delphi Method and it is also not easily affected by extreme opinions (Liu, 2013). The details of FDM implementation are briefly discussed in the following subsection.

3.1 Research Sample

According to Chang & Wang (2006), the appropriates in selecting the expert group need to be considered when using FDM. The experts for this research were chosen from three leading players in TVET TE environment, namely the TVET TE institution, the government and the industry. Three experts were selected from each group, respectively making it a total of nine experts involved in this research. The sampling was done through purposive sampling and snowball technique based on researchers' networking. Purposive sampling was done to identify the expert initially. The following experts were then identified through snowball technique by getting suggestion from the first expert. This will ensure the experts are coming from the expertise circle.

3.2 Research Instrument

The FDM utilized the distribution of the questionnaire to all the experts at the same time. The questionnaire was developed from the previous stage analysis, which is the qualitative phase. During this phase, domains and elements were explored through the interview session and analyzed using thematic analysis. The output was then constructed into a set of questionnaire for the FDM stage. There are 25 items for three constructs. For each construct, an open-ended item was provided for the experts to provide any additional input regarding the construct. A seven Likert Scale of agreement was used in the questionnaire. According to Shelton and Creggan (2015), a Likert scale allows for statistical analysis to determine if consensus is met using a predetermined level. For this research, the online survey using Google Form was used. The uses of the online survey contributed to time and cost saving during the data collection.

3.3 Data Collection

Afore mention, the data were collected through an online survey. The researcher had approached all the experts through email and Whatsapp application with the link for the online survey form. The researcher monitored the responses within a week and did follow up with the experts through a gentle reminder email and phone call. In a total of two weeks, all responses were collected, and the data were analyzed straight away.

3.4 Data analysis

The first step in analyzing data for FDM is converting the Likert Scale to Fuzzy Scale. This conversion produced the Triangular Fuzzy Number that was used in the analysis process. Triangular Fuzzy Number consists of three values namely the smallest values (m_1), most plausible values (m_2) and maximum values (m_3) (Jamil, Siraj, Hussin, Noh, & Sapar, 2014). The fuzzy scales allow the researcher to identify the range of possible score that reflect the experts' opinion instead of the single score provided by the traditional scale (Li, 2013).

With the Triangular Fuzzy Number, the data were then interpreted to identify the status of the item to be selected or rejected. There is three main requirements, which is the threshold value, expert consensus and defuzzification process. All this requirement must be met for the item to be selected. The threshold value used in this research is 0.2, where all experts are considered to reach consensus once the threshold value is equal or less than 0.2 (Cheng & Lin, 2002). The value for expert consensus is 75% as in the traditional Delphi Method Murry & Hammons (1995). As for defuzzification, the Fuzzy Score produce must be above the α -cut value, 0.5 (Bodjanova, 2006). The goal of defuzzification analysis is to convert the triangular fuzzy numbers into an exact value so the factors can be analyzed and ranked (Wang & Ho, 2008). Therefore, the final step of data analysis will be ranking the item based on the Fuzzy Score.

4. Result and Discussion

Based on the analysis, one item was rejected since it did not meet the requirement of FDM, which is under the Program System dimension. For Management System and Support System, all items are selected. The highest Fuzzy Score for the

dimension is the Support System [DF 0.907], followed by the Management System [DF 0.893] and finally, the Program System [DF 0.862]. Further result for each dimension is discussed in the subsection below.

4.1 Program system

There are 11 elements explored in the previous phase for sustainable program system. These items were used in the FDM phase as items in the questionnaire. After the analysis, one item has been rejected since it did not pass the FDM requirement. The Fuzzy Score for this dimension is 0.862, with overall expert consensus is 92.90%. Table 1 shows the analysis output for the program system.

Table 1 - Analysis output for Program System

No	Item	*d	Expert Consensus >75%	**DF	Rank	Status
1	The skill training in the program focuses on the quality over quantity of the skill training program	0.068	100.00%	0.933	1	SELECT
2	The industrial training of TVET-TE students is performed with flexible training time	0.068	100.00%	0.933	1	SELECT
3	Having good employability rate	0.104	88.89%	0.915	3	SELECT
4	The TVET TE program is able to run over the time	0.174	100.0%	0.878	4	SELECT
5	The TVET TE program is able to produce quality TVET teachers	0.174	100.0%	0.878	4	SELECT
6	The TVET TE program has a steady flow of fund, students and lecturers	0.210	88.89%	0.844	6	SELECT
7	The TVET TE program is free from any political influence	0.200	88.89%	0.833	7	SELECT
8	The implementation is focusing on info-culture development	0.190	88.89%	0.822	8	SELECT
9	Teaching training session is run simultaneously after theory session on a daily or weekly basis.	0.216	88.89%	0.820	9	SELECT
10	Teaching training session is run at the end of every semester for the whole study period	0.216	88.89%	0.819	10	SELECT
11	The TVET TE program should practice open admission system that allows all types of student to enroll	0.204	88.9%	0.804	11	SELECT
12	Focusing on become famous and good in the educational system	0.383	55.6%	0.685	12	DELETE
Average Fuzzy Number for construct			92.90%	0.862		

*d : threshold value; **DF: Fuzzy Score

Based on Table 1, the quality of the training program is deemed to be the most important for sustainable TVET TE program together with flexible training time for industrial training of TVET TE students. Both item share similar score indicates that both are equally important from the experts' point of view. A flexible training program currently are widely used by the training of the medical field. Study of flexible training programs such as Flexibility in Surgical Training (FIST) (Cullinan et al., 2018) and Less Than Full-time Training (LTFT) (Scriven, 1998) has shown the trainee are more successful and meet the requirement of the training. Despite sharing the same score, both items are critical questions since flexible training time may influence the quality of the training program itself. However, this research has indicated that experts were agreed both elements are essential and will support each other.

On the other hand, the lowest criteria are the practice of open enrol system for the TVET TE program. The open enrol system refers to the requirement for registering that does not limit to any educational achievement or background. This shows that experts believe the TVET TE program requires particular criteria of the student to enrol. Since this is an identification process, the reason behind the data cannot be interpreted. Overall, one item was rejected, which is the need

for the program to become famous and useful in the educational system. It is not essential for the program to aim for popularity because this program has its target market, which generally from the various TVET provider in the country.

4.2 Management System

For the Management System, there are six elements explored and converted into six items in the questionnaire. No item rejection for this dimension. The Fuzzy Score for Management System dimension is 0.893 and experts is 92.59% agreed on the importance of this dimension. Table 2 shows the analysis output for the Management System.

Table 2 - Analysis output for management system

No	Item	*d	Expert Consensus >75%	**DF	Rank	Status
1	There is a proper 'hand-over' system between TVET TE lecturers in handling equipment	0.068	100.0%	0.933	1	SELECT
2	The TVET TE students are allowed for 'earn and learn' along their study period through apprenticeship program	0.104	88.9%	0.915	2	SELECT
3	The TVET TE management system should consider reskilling and upskilling certification program as a part of requirements for TVET TE lecturers' promotion	0.104	88.89%	0.915	2	SELECT
4	The TVET TE management system should consider research as a part of requirements for TVET TE lecturers' promotion	0.129	100.00%	0.874	4	SELECT
5	The TVET TE management system should consider mentoring and coaching as a part of requirements for TVET TE lecturers' promotion	0.141	88.89%	0.870	5	SELECT
6	The management of TVET TE program excluding TVET TE lecturers from clerical works	0.173	88.9%	0.852	6	SELECT
Average Fuzzy Number for construct			92.59%	0.893		

*d : threshold value; **DF: Fuzzy Score

Based on Table 2, the most crucial element for the Management System is the existence of a formal 'hand-shake' system among TVET TE lecturers after the turnover or retirement of former lecturers. There are cases where new staff that is under-qualified was employed to teach that respective field (Donitsa-schmidt & Zuzovsky, 2016). This will create a gap in skills to deliver the knowledge effectively since the skills and knowledge of related equipment will not be appropriately passed, which will lead to the abundance of the equipment as well. It is vital for the TVET TE program to fully utilize its resources, including the equipment to be sustainable. This issue is still underexposed in TVET TE since the related research publication is still few. However, several international researches have proposed the use of a specialized method such as ShadowBox (Borders, Polander, Klein, & Wright, 2015) in training new staffs to develop skill equal to former staffs swiftly and efficiently. This approach could be applied to improve the 'hand-over' system among TVET TE lecturers.

Meanwhile, the least important element for this dimension is the excluded TVET TE lecturers in doing clerical works. The expert consensus on this element is still high, which is 88.9% experts deem this element to be necessary. The clerical tasks that turn to excess burden to teacher have been reported for many years (Grollman & Rauner, 2007; Othman & Omar, 2014; Taharim, 2017). This indicates that it requires the attention of related bodies to improve the situation on this matter.

4.3 Support System

As for the Support System, it consists of seven items that indicate seven elements explored. There is none item rejected, and every item is highly accepted by the experts. The Fuzzy Score for this dimension is 0.907 and experts is 98.11% agreed on the importance of this dimension. Table 3 shows the analysis output for the Support System.

Table 3 - Analysis output for Support System

No	Item	*d	Expert Consensus		Rank	Status
			>75%	**DF		
1	The funding system for TVET TE should be a merit based funding that evaluates the performance of the fund/grant	0.068	100.0%	0.933	1	SELECT
2	The public and private TVET TE sector should support each other through teamwork	0.068	100.00%	0.933	1	SELECT
3	The collaboration of TVET TE program should involve all types of industry	0.075	100.00%	0.922	3	SELECT
4	The TVET TE stakeholders should support each other to share the vision and mission of TVET	0.075	100.00%	0.922	3	SELECT
5	The support system for TVET TE should give focus on amplifying the existing support	0.075	100.00%	0.911	5	SELECT
6	The support for TVET TE development should focus on software and digital content towards TVET TE lecturers upgrading	0.068	100.0%	0.900	6	SELECT
7	The financial support of TVET TE implementation should be shared by the institution and industry	0.180	88.9%	0.826	7	SELECT
Average Fuzzy Number for construct			98.11%	0.907		

*d : threshold value; **DF: Fuzzy Score

Based on Table 3, all items are highly accepted by the experts with the majority has 100% consensus. The first rank based on the Fuzzy Score is related to the form of funding that should be implemented in TVET TE system. It should be in a merit-based funding that requires competitive proposal bidding among the TVET TE institution with the government. This merit-based will only provide funds periodically based on the objective achievement of the grant. This type of funding is suggested by Metin (2015) as well, where universities should submit paperwork to the government every semester to get financial aid. This will encourage TVET TE lecturers to be competitive in doing research. This researcher identity among lecturers will help them to develop the same character within the TVET TE students. Having a teacher-researcher identity will encourage TVET teachers to support their student in learning better and challenge the educational reforms to be better as well (Taylor, 2017).

The least favourable by the experts for this dimension is regarding the cost-sharing between industry and institution. It is still applicable for sustainable support with Fuzzy Score 0.826. With 88.9% consensus, some experts do not agree with the item indicates the financial support for TVET TE program should come from various resources, not only from the two players. Previous research had suggested the financial support for the student should come from the government instead (Metin, 2015). Agree with a different perspective, Jacob, Ho, Yao, & Xiong (2018) noted that, it is undeniable for the institution-industry partnership to be an essential alternative source of funding, however, the integration of government is still essential to better encourage the collaboration.

5. Conclusion

Overall, experts had reach consensus on the sustainable system for TVET TE program to have three primary systems, namely program system, management system and support system. Each system has its element that contributes to the durability of the dimension, respectively. There is plenty of room for further research to improve the sustainability of TVET TE program. It is the responsibility of all players towards this objective in enhancing the quality and performance of the nation TVET TE program so that it will be able to produce high-quality TVET teachers that will influence the quality of TVET graduates holistically.

6. Acknowledgement

We thank our colleagues from the Faculty of Technical and Vocational Education, UTHM who provided insight and expertise that greatly assisted the research. However, they may not agree with all of the interpretations/conclusions of this paper.

References

- Bodjanova, S. (2006). Median alpha-levels of a fuzzy number. *Fuzzy Sets and Systems*, 157, 879–891. <https://doi.org/10.1016/j.fss.2005.10.015>
- Borders, J., Polander, N., Klein, G., & Wright, C. (2015). ShadowBox™ : Flexible training to impart the expert mindset. *Procedia Manufacturing*, 3(February), 1574–1579. <https://doi.org/10.1016/j.promfg.2015.07.444>
- Chang, P., & Wang, Y. (2006). Fuzzy Delphi and back-propagation model for sales forecasting in PCB industry. *Expert Systems With Applications*, 30, 715–726. <https://doi.org/10.1016/j.eswa.2005.07.031>
- Cheng, C., & Lin, Y. (2002). Evaluating the best main battle tank using fuzzy decision theory with linguistic criteria evaluation. *European Journal of Operational Research*, 142, 174–186.
- Cullinan, D. R., Wise, P. E., Delman, K. A., Potts, J. R., Awad, M. M., Eberlein, T. J., & Klingensmith, M. E. (2018). AC. *Journal of the American College of Surgeons*. <https://doi.org/10.1016/j.jamcollsurg.2017.12.024>
- Donitsa-schmidt, S., & Zuzovsky, R. (2016). Quantitative and qualitative teacher shortage and the turnover phenomenon. *International Journal of Educational Research*, 77, 83–91. <https://doi.org/10.1016/j.ijer.2016.03.005>
- Economic Plan Unit. (2015). *11th Malaysia National Plan 2016-2020* (2nd ed.). Putrajaya, Malaysia: Percetakan Nasional Malaysia Berhad.
- Goodine, I. (2010). TVET Teacher Education towards sustainable Development : Framework and Initiatives. In *Best Practices in ESD in TVET*. Toronto.
- Grollman, P., & Rauner, F. (2007). TVET Teachers: An Endangered Species or Professional Innovation Agent? In P. Grollmann & F. Rauner (Eds.), *International Perspectives on Teachers and Lecturers in Technical and Vocational Education* (pp. 1–26). The Netherlands: Springer.
- Jacob, W. J., Ho, K., Yao, S., & Xiong, W. (2018). International Journal of Educational Development Changes in Chinese higher education : Financial trends in China , Hong Kong and Taiwan. *International Journal of Educational Development*, 58, 64–85.
- Jamil, M. Ri. M., Siraj, S., Hussin, Z., Noh, N. M., & Sapar, A. A. (2014). *Pengenalan Asas Kaedah Fuzzy Delphi Dalam Penyelidikan Rekabentuk Pembangunan* (1st ed.). Selangor: Minda Intelek Agency.
- Khambayat, R. P., & Majumdar, S. (2010). Preparing Teachers of Today for the Learners of Tomorrow. *Journal of Engineering, Science and Management Education*, 2, 9–16.
- Li, Q. (2013). Expert Systems with Applications A novel Likert scale based on fuzzy sets theory. *Expert Systems With Applications*, 40(5), 1609–1618. <https://doi.org/10.1016/j.eswa.2012.09.015>
- Liu, W. (2013). Application of the Fuzzy Delphi Method and the Fuzzy Analytic Hierarchy Process for the Managerial Competence of Multinational Corporation Executives. *International Journal of E-Education, E-Business, E-Management and E-Learning*, 3(4), 313–317. <https://doi.org/10.7763/IJEEEE.2013.V3.248>
- Majumdar, S. (2011). New Challenges in TVET Teacher Education. *Newsletter*, 13(2).
- Medrick, R. (2013). A Pedagogy for Sustainability Education. *Journal of Sustainability Education*, 5(May).
- Metin, R. (2015). Entrepreneurship Education at Universities : Suggestion for A Model Using Financial Support. *Procedia - Social and Behavioral Sciences*, 195, 856–861. <https://doi.org/10.1016/j.sbspro.2015.06.364>
- Ministry of Education Malaysia. (2015a). *Malaysia Education Blueprint (Higher Education)*. Putrajaya, Malaysia: Ministry of Education Malaysia.
- Ministry of Education Malaysia. (2015b). National Education Philosophy. Retrieved February 7, 2015, from <http://www.moe.gov.my/en/falsafah-pendidikan-kebangsaan>
- Murry, J. W., & Hammons, J. O. (1995). Delphi : A Versatile Methodology for Conducting Qualitative Research. *The Review of Higher Education*, 18(4), 423–436.
- Othman, N., & Omar, H. M. (2014). BEBAN TUGAS DAN MOTIVASI PENGAJARAN GURU DI SEKOLAH MENENGAH DAERAH RANAU. *Journal for Educational Thinkers*, 5.
- Razzaly, W. (2010). The Development of Competency of Vocational Teachers in Malaysia : Curriculum Development Perspective, (July 2011), 10–11.
- Scriven, P. M. (1998). Evaluation of flexible (part-time) training in anaesthesia. *British Journal of Anaesthesia*, 81, 268–270. <https://doi.org/10.1093/bja/81.2.268>
- Shelton, K., & Creghan, K. A. (2015). Demystifying the Delphi Method, 84–104. <https://doi.org/10.4018/978-1-4666-7456-1.ch005>
- Somekh, B., Chang, L. H., & Noor Aini Ahmad. (2011). The critical reflection profile : Working to raise the quality of teacher education in Malaysia. *Journal of Research, Policy & Practice of Teachers & Teacher Education*, 1(1), 59–76.
- Spöttl, G. (2009). Teacher education for TVET In Europe and Asia : The comprehensive requirements. *Journal of Technical Education and Training*, 1, 1–16. Retrieved from <http://eprints.uthm.edu.my/550/>
- Taharim, N. F. (2017). CLERICAL WORK FOR SCHOOL TEACHERS : A BURDEN OR A RESPONSIBILITY ? *Journal of Humanities, Language, Culture and Business*, 1(3), 26–36.
- Taylor, L. A. (2017). How teachers become teacher researchers : Narrative as a tool for teacher identity construction. *Teaching and Teacher Education*, 61, 16–25.

- Wang, H., & Ho, Y.-F. (2008). Applying Fuzzy Delphi Method to Select the Variables of a Sustainable Urban System Dynamics Model. *Proceedings of the 26th International Conference of System*, 1–21.
- Yunos, J. M., Esa, A., Jamil, M. Ri. M., & Rosli, D. I. (2010). Transnational Standards Design Framework for TVET Teacher Training Program. In *ESD in TVET 2010* (pp. 227–237).