



---

## The Effect of Learning Competency on Effective Student Skills

**Shamsul Kamal, Rohaniza Md Radzi, Khairul Mizan Taib, Nor Zaina Zaharah  
Mohamad Ariff, Kasmarini Baharuddin, Mohd Najmi Abdul Halim, Mohd Jailani  
Paiman, Marlia Idrus, Juwahir Ali**

Faculty of Information Management, Universiti Teknologi MARA, 40150 Shah Alam, Malaysia

---

**Abstract** Basic information about the preliminary study of the research area. This study will add more understand of the requirement needed by the institution over the important competencies for educators / teachers that will match with the Industry 4.0 requirements. Technology trends, economy factor changes and the need for unique and specialize labour force shows that career patent has changing. Moreover, currently human capital is focusing on people that have creative thinking and problem-solving abilities. Education in Malaysia is organized and monitored by Ministry of Education. MOE is responsible to standardize our education system, provide guidelines and also responsible to create national curriculum for pre-tertiary and technical and vocational education and learning. The significant changes in economy, jobs and business are driving the different skills demand [1]. Furthermore, the new era has coming, which is Industry 4.0 that focus on the 21<sup>st</sup> century skills requirements. This has affected our education system both in technical education and education generally [2].

**Keywords** Preliminary Study, Labour Force, MOE, Skills Demand, Education System

---

### Introduction

Education in Malaysia is organized and monitored by Ministry of Education. MOE is responsible to standardize our education system, provide guidelines and also responsible to create national curriculum for pre-tertiary and technical and vocational education and learning. The significant changes in economy, jobs and business are driving the different skills demand [1]. Furthermore, the new era has coming, which is Industry 4.0 that focus on the 21<sup>st</sup> century skills requirements. This has affected our education system both in technical education and education generally [2]. In 21<sup>st</sup> century, STEM framework has been adapted into our education system. STEM is the abbreviation from Science, Technology, Engineering and Mathematics [3]. Therefore, the implementation of the framework just started being revised in 2017 with STEAM framework, which 'A' represent Art. The STEAM concept is embedded into KSSR and KSSM curriculum to develop students' competency for lifelong learning. According to [1,3-4], the curriculum for our students will need to embed four (4) competencies area, which is creativity, critical thinking, collaboration and communication. This is supported by Soland, Hamilton, & Stecher [5], but they classified the skills into three (3) major groups, which are cognitive, interpersonal and intrapersonal competencies. These skills are necessary as we are preparing our students for jobs that have not been created, technologies that have yet exist/invented in Malaysia and problems that we not foreseen to arise [6-7]. However, do we ready to accept these changes, able to understand the impact over our education system, do we plan enough to face this future and do our educators ready to accept this new education pedagogy. Research has found out that creating new generation of student by providing them with 21<sup>st</sup> century skills are important. Each level of education has its own curriculum that has been equip with method to help students gain knowledge and skills.



### Problem Statement

Over the decade the education industry has supplied many skill workers. Therefore, certain skills developed has flow over and majorities of them are jobless or not working in the suitable area of their study fields. Hence, those with advanced skills have been chosen to field in the positions. The past few years, researchers have started to identify the students' skills that will meet the 21<sup>st</sup> century supplies (Refer below diagram).

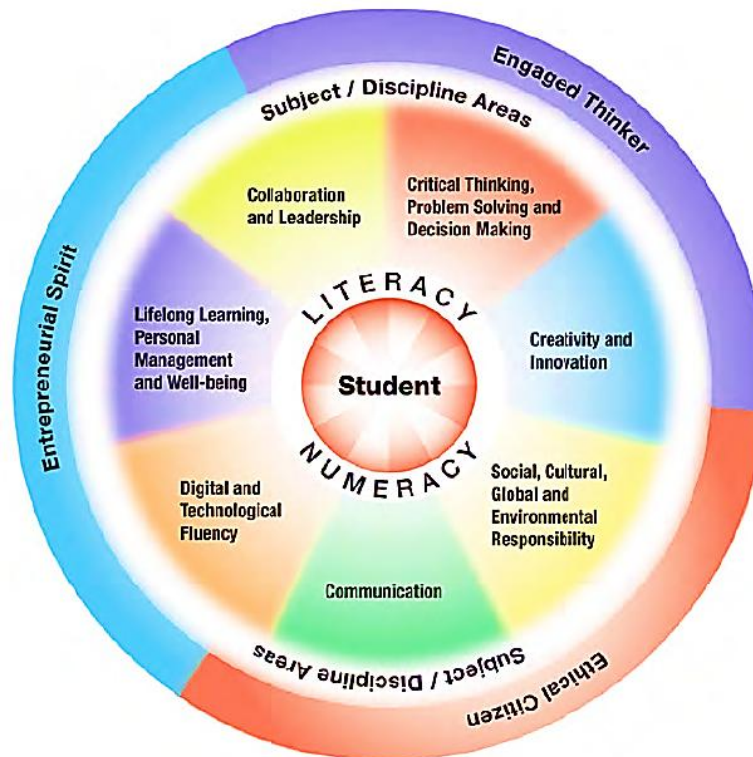


Figure 1: 21st Century Competences. Association for Supervision and Curriculum Development (ASCD) [8] Studied by (National Institute of Education Singapore [9]) believed that, having strong teacher competency and support from profession development program will provide 21<sup>st</sup> century teaching professional. The attributes which contribute to the professional educators are learners centered values, teacher identity, service to the profession and community, skills and knowledge. Thus, these require **individual values, skills and knowledge**. Many initiatives have been suggested over many years. Therefore, inconsistent in teaching styles/methods to deliver the expectation of students and parents have brought unpleasant feedbacks from them [7]. The gap between educators and students will rise and might contribute to the student's success or failure. When developing the new curriculum, "The quality of an education system must not exceed the quality of its teachers" [10]. Thus, teachers' teaching and learning quality must also change and to be upgraded. The improvement of student outcome means that class management need to be improved. Therefore, the changes are needed to apply by the educators in the classroom. Furthermore, no compromise on the teachers' quality. Researched done in 2016 shows that in Malaysia there are over 116 international schools with 68% students were Malaysian [10]. Event though, private institution run on their private funding, many parents has shifting the kids from government school to private school. The parents believed that international school will help balance the children life by focusing on independent thinking, English competency and attain critical thinking. According to (Nair [11]), teacher quality has become issue in this modern technology. Teacher does need to adopt the new change as soon as possible. The demand comes from students, parents, education system and industry. Hence, teacher must know which area of competencies need to focus in their teaching and learning. Study by (Ede & Daud [12]) were clearly mentioned that teachers must competent in their pedagogical learning, personal, professional and social proficiency. Therefore, these study will focus on 3 main areas of teacher competence, covering teacher professional knowledge, teacher professional skills, and teacher personal characteristics and behavior (attitudes and values) to handle students with different background and level of understandings.



### Significance of the study

Educators might face many challenges during the student development to fulfill the 21<sup>st</sup> century skills. High expectation from the societies will put them on the situation to upgrade their knowledge and skills to match with the National philosophy standard (Ministry of Education Malaysia, 2013) from Malaysia's education system. With the influenced from the Revolution 4.0, educators have no choice but to find ways to improve their knowledge. Another challenge is to decide the specific skills within the domain / category that suitable for teaching and learning. Hence, educators will also experience challenge in transferring knowledge to students [13]. Furthermore, students from new generation are fast forward over the use of technology during their study and daily life. The unbalance skills between the students due to the different background and exposure, has given difficulties to educators when putting them in the same group of study. However, with the educators' abilities, the gap can be removed or reduced.

### Literature Review

Teaching has influenced many people and play as important role in academic institution. As an educator, the job is very challenging. The influence from the community, specifically students, parents, and school management may result in either negative of positive impact to the professional development of educators. Therefore, this study is focusing on teacher's teaching and learning. By understanding the important need of teaching and learning, will helps educators and school management to plan for organizational goals effectively and efficiently. Teaching is about arts and science that reflects from creativity and passion. Teacher with effective teaching and learning styles can influence student's progress by using interactive process between teacher/educator and students, and some aspects of learning environment (school, parent, community) [14].

Studied by (Westbrook et al., [15]) has identified three strategies that promoted pedagogy's interactive: There are (i) feedback, sustained attention and inclusion; (ii) creating a safe environment and supportive their learning; (iii) drawing on students' backgrounds and experiences.

Researched said that, teaching and learning style were developed from various factors' range including theories and research evidence, practice evidence, student's individual and group reflection, teacher's/educators' experiences and expertise, and also community expectations and requirements. Different teachers will have different teaching style and approaches. Therefore, their objectives are important to achieve positive outcomes for students. The results of achievement are different depending on the teaching quality. Hence, quality teaching/pedagogy is identified as most important factor that will affects students' outcomes. Strong foundation needs to build for ongoing learning and development in all aspects of life.

Figure 2 shown the model/framework created by (Arifin et al., [16]). Their study has identified four (4) type of competencies required for effective job performance for vocational college teacher, which are "Teaching competency", "Professional Competency", "Communication Competency" and "Personal Competency". They believed that teacher competency can be developed by understanding the skills, knowledge and capabilities of specific jobs and in this case is as an educator. Knowing that vocational teachers are necessary to have broad knowledge in the subject matter expect in theory and hands on / practical skills, they are facing many challenges to keep their knowledge and skills matching with current and future need for students' performance. Therefore, the model will give the understanding of what type of teacher competency are needed by the 21<sup>st</sup> century educators and give the opportunity for the Human Resource team to design and planning the suitable professional development for the vocational teachers.

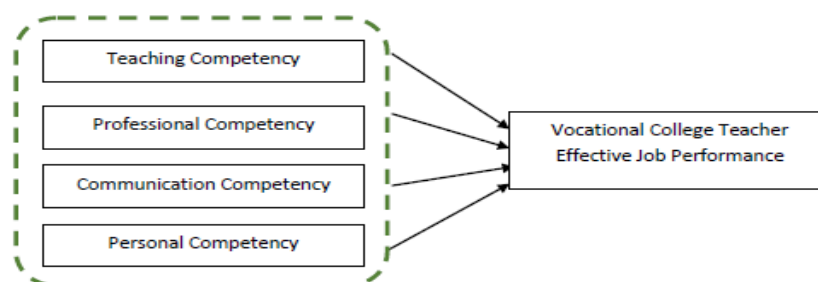


Figure 2: Taken from "Competencies of Vocational Teacher: A Personnel Measurement Framework" [16]



How to improve teacher competency? Study by Rozdi et al [17] are focus on three (3) variables, which are professional development, teacher efficacy and organizational support. The model shown below (refer figure 3), has clearly describe that professional development is the main factor that reflect to the teacher efficacy and help to improve teacher competency. This has add on to the study by (Arifin et al [16]) which they just focused on the type of competencies needed by teachers. They also admitted that teaching profession in 21<sup>st</sup> century has exposed to the demand of industry, new ideology, and influence from many areas. Teacher qualities will be one of the factor to determine student performance, in physical psychology level. Therefore, professional development will reduce the gap exist in the educators' personal competency.

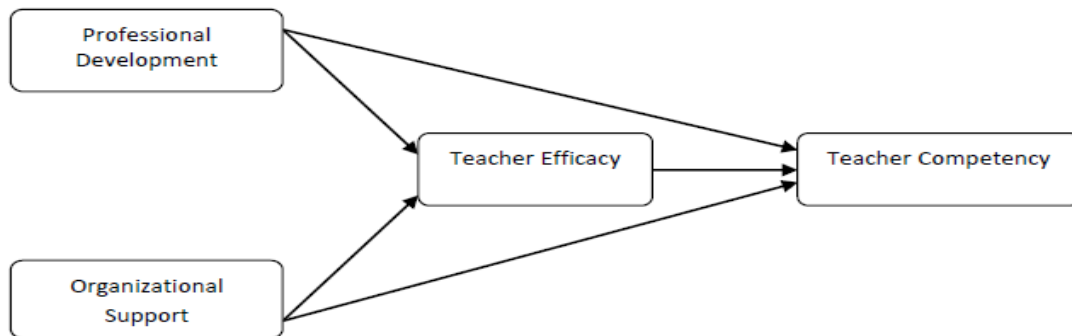


Figure 3: Taking from Competency Model of Science Teacher in 21st Century [17]

(Food and Nutrition Board, 2013), had identified three (3) variables that related to the student achievement, which are professional development, teacher knowledge and skills and classroom teaching (Refer to figure 4). No matter who is the teachers, which subject field they are assigned to and which school environment they contribute as a teacher, they really need the professional development to ensure a continuous process of acquiring new knowledge and skills that relate to an educator's profession and relevant to the current and future skills trend. According to this study, professional development is essential for improving classroom instruction and student achievement. Many training activities can be chosen such as classroom or online venues, workshops, seminars, teleconferences, and webinars, with the ultimate goal of improving the delivery of instruction to enhance student achievement.

### Methodology

Research design is defined as a framework of methods and techniques chosen by a researcher to combine various components of research in a reasonably logical manner so that the research problem is efficiently handled. It provides understandings about conducting research using a particular methodology. The design of a research topic is used to explain the type of research (experimental, survey, correlational, semi-experimental, review) and also its sub-type (experimental design, research problem, and descriptive case-study) [18].

There are two (2) approaches of research method you can choose to support your research design: quantitative approach and qualitative approach:

- (a) Qualitative Research is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem.
- (b) Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics. It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population. Quantitative Research uses measurable data to formulate facts and uncover patterns in research.

For this study, quantitative approach is selected. Based on the above definition, this study is to verify the pattern of teacher competency at school to work towards generating 21<sup>st</sup> century skills at school level and to confirm either the professional development is helping their effective teaching style. The style used is what we call as experimental design, which use the scientific method to establish cause-effect relationship among a group of variables in this research study. By examining the current study objectives and questions, survey using



questionnaires is selected. A questionnaire is defined as a research instrument that consists a set of questions or other types of prompts that aims to collect information from a respondent. It can consist of mix of close-ended questions and open-ended questions. The open-ended questions will offer the ability / flexibility for the respondent to elaborate more on their thoughts. A questionnaire is a set of questions typically used for research purposes which can be both qualitative as well as quantitative in nature. Therefore, this study is using the questionnaire for quantitative method of research. The questions use is more structured compare to qualitative method of questionnaires. The advantages of using questionnaires are:

- (a) Questionnaires are inexpensive. Researcher can administrate the survey on their own without depending on others.
- (b) Questionnaires are practical to collect data for the targeted group.
- (c) Questionnaires offer a quick way to get results and allow to gather information from any size of population, especially large audiences.
- (d) Questionnaire is a quantitative in nature and allow easy analysis of results. With built-in tools, it's easy to analyze your results without a background in statistics or scientific research.
- (e) And most importantly, questionnaires can cover every aspect of a topic when it is designed and created properly.

The most commonly used technique to analyze data collected is using IBM SPSS Data Collection Data Entry. SPSS is short for Statistical Package for the Social Sciences, and it's used by various kinds of researchers for complex statistical data analysis. This application is used broadly by the researcher in many industries: market researchers, health researchers, survey companies, government entities, education researchers, marketing organizations, data miners, and many more for the processing and analyzing of survey data. It was designed to minimize time of doing the analyzation and to minimize errors in manual calculation. Hence, the results can be generated faster. The application format makes the process of pulling, manipulating, and analyzing data clean and easy. Once survey data is exported to SPSS, the opportunities for statistical analysis are practically endless. SPSS can provide flexibility and customizable way to get results, even for the most complex data sets. This gives the researcher, more time to do what they can do best and identify trends, develop predictive models, and draw informed conclusions.

**Table 1:** Statistics Structure

Item-Total Statistics				
Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
B1_1	60.60	49.012	0.815	0.944
B1_2	60.83	49.617	0.747	0.945
B1_3	60.71	50.563	0.652	0.947
B1_4	60.57	51.605	0.624	0.948
B2_1	60.69	49.457	0.774	0.945
B2_2	60.91	49.434	0.708	0.946
B2_3	60.77	48.240	0.822	0.943
B2_4	60.57	50.664	0.748	0.946
B3_1	60.77	49.005	0.740	0.946
B3_2	60.89	49.163	0.773	0.945
B3_3	60.80	50.635	0.671	0.947
B4_1	60.71	50.681	0.695	0.947
B4_2	60.63	50.240	0.587	0.949
B4_3	60.91	49.022	0.752	0.945
B4_4	60.83	49.676	0.803	0.944



Item Statistics			
Question	Mean	Std. Deviation	N
C2_ 1. I prepare my plans in accordance with the curriculum of my subject area.	4.51	0.742	35
C2_ 2. I prepare flexible teaching plans by considering the individual differences and sociocultural characteristics of students.	4.31	0.796	35
C2_ 3. I prepare teaching materials suitable to learning outcomes of the curriculum.	4.29	0.789	35
C2_ 4. I organize the learning environments by considering the individual differences and students' needs.	4.31	0.832	35
C2_ 5. I organize the learning environments by catering for learning outcomes of the curriculum.	4.23	0.731	35
C2_ 6. I organize democratic learning environments where students communicate effectively.	4.14	0.810	35
C2_ 7. I make use time effectively in teaching and learning process.	4.31	0.676	35
C2_ 8. I prepare activities to ensure active participation that help developing analytical thinking skills of students in my classes.	4.29	0.667	35
C2_ 9. I make use the information and communication technologies effectively in the teaching and learning process.	4.17	0.747	35
C2_ 10. I make use appropriate tools, equipment and materials effectively in the teaching and learning process that suitable to my subject area.	4.31	0.718	35
C2_ 11. I prepare and uses assessment and evaluation tools suitable to my subject area and stages of growth and development of students.	4.34	0.684	35

This chapter discusses the data analysis and findings of quantitative responses from questionnaire survey. The surveys conducted via online using Google form and direct approach. Questionnaires as one of the quantitative approaches for data collection are used to test the hypothesis of this study. Therefore, relationship between variables have been analyze in this chapter. In this chapter, result and discussions are covered by presenting the empirical results using the analysis and statistical techniques discussed in Chapter 3. IBM SPSS Statistics 25 software is used to analyze the collected sample data per suggested earlier. Most importantly, the quality of sampling and questionnaires are evaluated to determine the quality of both. Common method variance is considered a major problem and a threat to the validity of the results if one factor accounts more than 50% of the variance in the dataset. All 49 items construct under this study were entered for analysis and constrained to single factor. The results show that the single factor explained only 43.044% of the total variance, which is less than 50%. Therefore, this has suggesting that the collected data is free from the threats of common method variance, hence this ensure the validity of the results analysis. We have done pilot testing for 35 respondents before. Therefore, with total 155 sampling data, the reliability of the questionnaires is more acceptable and it is within the range. The results of Cronbach Alpha analysis are between 0.893 and 0.938 and it is proved that the results are consistent.

### Descriptive Analysis for Respondents' Demographic Profile

The personal characteristics of 155 teachers as respondents has been analyze with profile analysis. The demographic cover school/section, group of subject teaching, age, highest level of education, year of services



with current school and year of services as an educator. Therefore, the results might be different based on different profile of respondent. However, this study is not to test the relationship of respondents' personal profile but it is more to the professional skills, knowledge and teacher personal attitude and value in contributing to student effective skills.

### Descriptive Statistics for Independent and Dependent Variables

Using 5-points Likert Scale rank from strongly agree, agree, neutral, disagree and strongly disagree, respondents are asked about their perception on the important of students to have the most of effective student skills for 21<sup>st</sup> century. Furthermore, respondents are to confirm how important teacher professional knowledge, teacher professional skills and teacher personal attitude and value in order to develop the skills. The correlation analysis is a statistical measure that computes the strength of the relationship between variables. Therefore, calculated number greater than 1.0 or less than -1.0 means that there was an error or no relationship between variables measurement. A correlation of 0.0 shows no relationship between the movements of the two variables. However, correlation of -1.0 demonstrates no correlation at all, while a correlation of 1.0 shows strong correlation.

**Table 2:** Correlations analysis between variables

		Correlations			
		Effective student skills	Teacher professional knowledge	Teacher professional skills	Teacher personal attitude & value
Effective student skills	Pearson	1	0.658**	0.611**	0.636**
	Correlation		0.000	0.000	0.000
	Sig. (2-tailed)				
	N	155	155	155	155
Teacher professional knowledge	Pearson	0.658**	1	0.848**	0.800**
	Correlation			0.000	0.000
	Sig. (2-tailed)			0.000	0.000
	N	155	155	155	155
Teacher professional skills	Pearson	0.611**	0.848**	1	0.791**
	Correlation		0.000		0.000
	Sig. (2-tailed)		0.000		0.000
	N	155	155	155	155
Teacher personal attitude & value	Pearson	0.636**	0.800**	0.791**	1
	Correlation		0.000	0.000	
	Sig. (2-tailed)		0.000	0.000	
	N	155	155	155	155

\*\* . Correlation is significant at the 0.01 level (2-tailed).

155 sample data are collected for this study. Common method bias analysis proven the validity of results analysis (4.1). Whereas, the 155 samples data are adequate for this study and tested using KMO and Bartlett's test. Furthermore, questionnaires reliability is analyzed for the second time and proven that the questions are highly reliable to give consistent results. Besides, most of the respondents believe that teacher competencies will contribute successfully to the effective student skills. Additionally, the analysis has proven positive relationship between all variables.

### Recommendations and Conclusions

This study has proved that teacher competencies play a big role in developing effective student skills. Therefore, teacher will need to explore many competencies to support student performance. Teacher professional knowledge, skills and personal attitude and value will determine their quality as a teacher. Some respondents believed that students have full of surprise when it comes to skills and knowledge other than academic. Proper communication with students will able to help teachers build up relationship with students. This will make



teacher know them and understand better. Trust will be developed and student feel that they are being appreciate by teachers. Teachers said that, peer learning should be encourage to improve student confident level.

As an educator/teacher, they are supposedly not to show the emotions when handling students. Teacher must show love and passion. Teacher as respondents for this survey strongly support that creative thinking, problem solving, leadership, communication and understanding the benefits of technology are some of skills that students must have for the future need. The analysis shows that three (3) hypotheses are prevent related between teacher professional skills, knowledge and personal attitude and value. As a conclusion, teacher competencies do contribute to the successful of effective student skills. Along the process to complete this study, I found out few matters regarding teacher competency and student performance that can be consider for future research:

- (i) Does demographic profile of respondent affect the analysis result? How much different if respondent is female, compare to male teacher. How different if teacher year of services affected student performance?
- (ii) How teacher develop their skills and knowledge? Through fail or good experiences? Is it because they born with skills, knowledge and positive attitude? Do they attend any training often?
- (iii) Do they choose the teacher profession willingly or because of difficult situation? How the reason will affect their passion in teaching?

During the research, longer timeframe to do the surveys should be planned and the timeframe should give advantages to the researcher.

## References

- [1]. Partnership for 21st Century Learning. (2010). 21st Century Knowledge and Skills in educator preparation. American Association of Colleges of Teacher Education (AACTE) and the Partnership for 21st Century Skills (P21), (September). <https://doi.org/10.1787/9789264193864-en>
- [2]. Bahrum, S., Wahid, N., & Ibrahim, N. (2018). Integration of STEM Education in Malaysia and Why to STEAM. *International Journal of Academic Research in Business and Social Sciences*, 7(6), 645–654. <https://doi.org/10.6007/ijarbss/v7-i6/3027>
- [3]. Miller, A. (2013). 21st Century Skills and Designing Competencies. Retrieved May 13, 2019, from competencyworks.org website: <https://www.competencyworks.org/reflections/21st-century-skills-and-designing-competencies>
- [4]. Pacific Policy Research Center. (2010). 21 st Century Skills for Students and Teachers. *Kamehameha Schools Research & Evaluation*, 1–25.
- [5]. Soland, J., Hamilton, L. S., & Stecher, B. M. (2013). Measuring 21st century competencies: Guidance for educators. *Asia Society Global Cities Education Network Report*, (November), 68. Retrieved from <http://asiasociety.org/files/gcen-measuring21cskills.pdf>
- [6]. Puteh, M. (2017). *Higher education 4.0*.
- [7]. Vail, L. M. (2010). Teaching in the 21st Century. *University of North Carolina Wilmington*, 28(1), 4.
- [8]. Ontario Public Service. (2016). 21 Century Competences. *Association for Supervision and Curriculum Development (ASCD)*, (703).
- [9]. National Institute of Education Singapore. (2009). A Teacher Education Model for the 21st Century. In *National Institute of Education Singapore*.
- [10]. ASLI. (2018). Creating the Right Environment to Enable Quality Education. *Asian Strategy & Leadership Institute (ASLI)*, (April). Retrieved from [www.asli.com.my](http://www.asli.com.my)
- [11]. Nair, P. (2017). A Study on Identifying Teaching Competencies and Factors Affecting Teaching Competencies with Special Reference to MBA Institutes in Gujarat. *Gujarat Technological University*.
- [12]. Ede, M. N., & Daud, K. (2014). The fifth discipline and teachers competence. *International Journal for Innovation Education and Research, UTM Skudai*, 2(20), 131–138.
- [13]. Lamb, S., Doecke, E., & Maire, Q. (2017). Key Skills for the 21st Century: An evidence-based review. In *NSW Government*. Retrieved from <https://education.nsw.gov.au/our-priorities/innovate-for-the-future/education-for-a-changing-world/research-findings/future-frontiers-analytical-report-key-skills-for-the-21st-century/Key-Skills-for-the-21st-Century-Analytical-Report.pdf>
- [14]. Child Australia. (2017). What is pedagogy? How does it influence our practice? *Child Australia*.





- [15]. Westbrook, J., Durrani, N., Brown, R., Orr, B., Pryor, J., Boddy, J., & Salvi, F. (2013). Pedagogy , Curriculum , Teaching Practices and Teacher Education in Developing Countries. *University of Sussex, Centre for International Education*, (December).
- [16]. Arifin, M. A., Rasdi, R. M., Anuar, M. A. M., & Omar, M. K. (2017). Competencies of Vocational Teacher: A Personnel Measurement Framework. In 4th International Conference on Educational Research and Practice (pp. 147-164).
- [17]. Rozdi, Z. M., Othman, S., Ahmad, C. N. C., & Mohamed, Z. (2017). Translation, Validity and Reliability of Perceived Organizational Support. *International Journal of Academic Research in Business and Social Sciences*, 7(10), 2222-6990.
- [18]. DeFranzo, S. E. (2011). Qualitative and Quantitative Methodologies Concept. *Journal of Quality Assurance in Hospitality & Tourism*, 12(1), 73–81. <https://doi.org/10.1080/1528008X.2011.541810>.

