Jurnal Pendidikan Teknologi dan Kejuruan, Vol. 25, No. 1, May 2019, 52-61
ISSN: 0854-4735, accredited by KEMENRISTEKDIKTI, Decree No: 51/E/KPT/2019
DOI: 10.21831/jptk.v25i1.19118

THE CORRELATION OF HIGHER ORDER THINKING SKILLS AND WORK READINESS OF VOCATIONAL HIGH SCHOOL STUDENTS

Arsyadani Hasan and Pardjono
Postgraduate Program of Technological and Vocational Education, Universitas Negeri Yogyakarta, Indonesia
Email: arsyadani.hasan2016@student.uny.ac.id

ABSTRACT

Higher Order Thinking Skills (HOTS) are required to face a fast-changing and unpredictable situation or condition in the future. This study describes the HOTS profile of Vocational High School (VHS) students in Surakarta and its correlation with the work readiness in the field of mechanical engineering. The students' HOTS data were collected through the lathe technique examination, which has been tested empirically and validated by the subject matter. The result of the study showed that the HOTS profile of VHS students of mechanical engineering categorized as high, moderate and low were 36.81%, 18.68%, and 44.5% respectively. The higher thinking level of VHS students showed that students' work readiness was also higher. This means that HOTS was related to psychological, physical, and experiential aspects of the students. The result of HOTS profile could be used by the VHS teachers as the basis to provide high quality lessons to produce graduates equipped with HOTS and better competitiveness and professionalism in workplaces.

Keywords: higher order thinking skills, mechanical engineering, vocational high school, work readines

INTRODUCTION

Education has become one of an important factors in the development of a country since education is the basic means for implanting, training and developing the ability of the human resources of the country. Moreover, the development of education is related to the preparation of a qualified generation, who are able to adapt to the advancement of technology. A qualified human resource could be shaped through formal or informal education. The students will be taught about skills which would strengthen them academically and socially. The provision of qualified human resources could be done starting from High School education [1].

One of the methods to improve human resources quality is through vocational high education. Vocational high school (VHS) is formal education which trains its students on on specific skills which are suitable with their talent and interest. The VHS has an important role in developing the human resource for their preparation in workplaces [2]. There are several areas of expertise or programs on VHS, including engineering, office administration, sales, and marketing fields.

Vocational education has different characteristics compared to general education. This can be seen in the education criteria, the lesson, and the graduates. The characteristic of a vocational education according to Finch & Crunkilton [3] includes: (1) orientation of education and training, (2) justification for existence and legitimation, (3) focus on curriculum content, (4) the criteria for success of learning, (5) sensitivity for the development of society, and (6) a cooperation relation with the society. Vocational education as a sub-system of general educational aims at direct preparation of individuals for the world of work or world of industry as well as providing specific training that is reproductive based on teachers' instruction;

Received March 29, 2018; Revised June , 2018; Accepted July 6, 2018

with the intention to develop the understanding of a particular industry, comprising of the specific skills or tricks of the trade [4].

Article 3 of Indonesian Law of education, Decree No. 20/2003 further defines vocational education as a system of education which focuses on the ability as well as the character of individuals with the aim of developing their potentials, capability, creativity, independence and responsible in order to meet up with the global challenges into the world of work or industry.

Vocational education has an important role in developing human resource and technology in order to compete on a global scale. The preparation of human resource and technology are implicated on the characteristic or the principal of vocational education, which mean to be responsive and anticipative towards the technological advance [5]. Vocational education requires an effective learning strategy that is contextual based on the actual world of work and industry, work based competencies that is comfortable, safe, easy, and inexpensive to implement [6]. The statement underlines the importance of vocational education in preparing the students with qualified resource and trusted knowledge, behavior, and skills in order to cope with the advance of technology so that they are able to compete in the professional working world.

VHS challenge is how to produce graduates to take a part and compete in the condition of social, economic, cultural, and political uncertainty [7]. The other challenge is the learner's development in the 21st century, which is the era with an unpredictable and fast-changing condition thus the school has to be able to facilitate the learners' process or studies which should be suitable for the characteristics of today's learners [8].

The learning concept in the 21st Century has been shifted to the direction of students as the center or source of education, that is self-learning, self-actualization process with a focus on how to learn, self-rewarding, multiple sources of learning, networked learning, lifelong learning and learning without limited access to information (everywhere and anytime), unlimited, opportunities, world-class learning, local and international outlook [9].

The learning in 21st Century emphasizes on the students' ability in critical thinking, higher order thinking skills, able to link their knowledge with the real world, mastering information technology, to communicate and collaborate [10]. The skill is achieved through the implementation of the learning method which corresponds with the mastering of materials and skills. This shows that education is a pioneer in creating qualified human resources. Education covering science, technology, engineering, and mathematics, is the basis for the implementation of a more effective and relevant education [11].

One of the main focuses of 21st century thinking competence in achieving learning objectives is Higher Order Thinking Skills [12], [13]. The skill demands qualified human resources in order to compete on a global scale. This is the main learning objective in VHSs, especially in mechanical engineering program, thus the students possess the skills to think logically and critically to understand the concepts and principles which are related to the pattern and spreading of social interaction, space, needs, and the society development in order to create a better living condition and solve problems in society [14].

Higher Order Thinking Skills (HOTS) can be trained to the students by giving motivation and counseling [15]. HOTS is determined by the usage of thinking space for a new challenge. HOTS, according to Darby & Rashid [16], covers thinking critically, logically, reflectively, meta cognitive, and creatively. While the category of HOTS according to Tanujaya et al. [17] covers several aspects, which are: (1) Analysis, evaluation, creation, (2) Logical reasoning, (3) Decision and critical thinking, (4) Problem solving, (5) Creativity and creative thinking.

HOTS is related to the preparation of VHS graduates in entering the industry. A qualified vocational graduate is not only skilled in practice but also able to think deeply [18]. HOTS is required in developing a human's character. The professional working world demands a skill which corresponds with the company's goal for improvement and to maximize the company's profit [19]. Subkhan et al. [4] , explained that there are 23 skill attributes which required in workplaces and industries, namely: effectiveness, competence, management, creativity, futuristic thinking, leadership, trust, orientation goal, learning, decision making, negotiation, communication, employee development or coaching, analytical problem solving, cooperation, presentation, diplomacy, conflict management, empathy, customer service, planning or organizing, interpersonal skills, Higher Order Thinking Skill (HOTS) and self-management. Based on the skills required in the working world, HOTS is one of the basic skills which must be possessed by the students of VHS. In order to produce work-ready graduates, the materials are planned and regulated to achieve and improve the students' HOTS [20].

The objective of this study is to study and analyze the HOTS achievement of a VHS students in the Mechanical Engineering Program, and to indentify the correlation of HOTS and work readiness. This is cruacial since the Mechanical Engineering graduates are required in working and an industrial world [21]. The HOTS achievement could be used as the basis for the teachers in implementing the lessons and its relation with the working readiness of VHS graduates.

METHOD

This study was an ex post facto study. It was conducted in the second semester of 2017/2018 academic year. The population consisted of the students of VHSs at the mechanical engineering program in Surakarta. The population of this study included 839 students. This study did not conduct entirely to all of the population, but it was studied based on the number of samples. The samples were 182 students from nine VHSs. The sampling technique used was proportional random sampling with the assumption of the homogeny student population of VHS Mechanical Engineering in Surakarta. The instrument which was used were reasoned multiple choice questions on lathe learning materials, to measure the HOTS. The research procedure was presented in Figure 1.

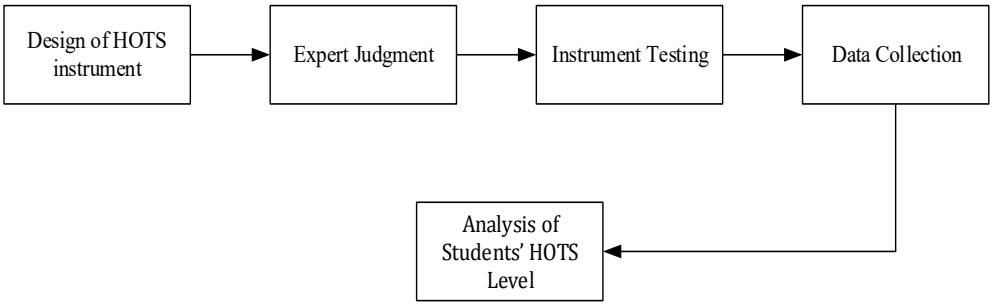

Figure 1. Research Procedure

The instrument used was a multiple-choice test on the materials of the lathe technique. The data were analysed with quantitative descriptive analysis. The analysis of HOTS using multiple-choice instrument use scoring guidance from Tursina [22], as described in Table 1.

Table 1. Instrument Scoring Guidelines

No	Interpretation	Score
1	Wrong answer with wrong reason	1
2	Right answer with wrong reason	2
3	Wrong answer with right reason	3
4	Right answer with right reason	4

Student scores are obtained based on specified scoring guidelines, then the score is used to determine the category which corresponds with the interval formula by Azwar [23].

$$\mu - \left(t\left(\tfrac{\alpha}{2}\, n-1\right)\frac{s}{\sqrt{n}}\right) \leq X \leq \mu + \left(t\left(\tfrac{\alpha}{2}\, n-1\right)\frac{s}{\sqrt{n}}\right) \quad (1)$$

where,
X = The total score of each respondent
μ = Theoretical mean on scale
t (∝/2 n-1) = value t on α/2, degrees of freedom n-1
s = standard deviation
n = number of subject

RESULTS AND DISCUSSION

Table 2 shows the results of construct validation by experts. Both experts stated that the HOTS-oriented problem is valid and feasible to be used in this research, with a mean of 3.45.

Table 2. Results of HOTS validation

Expert 1	Expert 2	Score Mean	Interpretation
3.40	3.51	3.45	Valid

Based on the construct validation by experts, the reasoned multiple-choice test is tested empirically. The empirical test is given to 42 students. The result of the empirical test with the Quest program shows that 20 questions are fit and valid to be used in the research, while the question reliability shows item and personal reliability presented in Table 3.

Table 3. Question Reliability

Reliabilities	Value	Interpretation
Item	0.69	Reliable/High
Personal	0.84	Reliable/High

After the empirical test had been conducted, the field test was conducted to discover the HOTS of VHS students of Mechanical Engineering program in Surakarta. According to operational verbs, there are several indicators for measuring HOTS (1) students can analyze with sub aspect to sort or to organize and attributing or giving special characteristic, (2) students can evaluate with sub aspects of checking, criticizing, or responding, (3) students can

create with sub aspect of formulating or generating ideas and planning or designing.

In this study, the multiple-choice assessment instrument was reasoned in addition to being an evaluation tool on formative tests as well as to examine and measure students' HOTS. The use of multiple choice instruments is grounded based on the HOTS indicators. Students' thinking level is divided into 3 categories; low, moderate, high as shown in Table 4.

Using equation (1), then the theoretical mean is on the scale $\mu = 50$, value $t_{\left(\frac{\alpha}{2},n-1\right)} = t_{\left(\frac{0.05}{2},68-1\right)} = 1.994$, varians $s = 55.43$ and standard deviasi $S = 7.44$. Limit the score to be in equation (2).

$$48.92 \leq x \leq 51.08 \quad (2)$$

Equation (2) is then used as a reference for categorization of low, moderate and high HOTS levels.

Table 4. The Category of HOTS of Vocational Education Students

Score Range	Category
X > 51.08	High
48.92 ≤ x ≤ 51.08	Medium
X < 48.92	Low

The test is conducted in nine VHSs in Mechanical Engineering programs in Surakarta. This is intended to observe the differences of HOTS in each of the different levels. Figure 2 shows the percentage of the students' HOTS in the category of low, moderate, and high from nine VHSs in Mechanical Engineering program in Surakarta. The description of HOTS level of each VHS is shown in Figure 2.

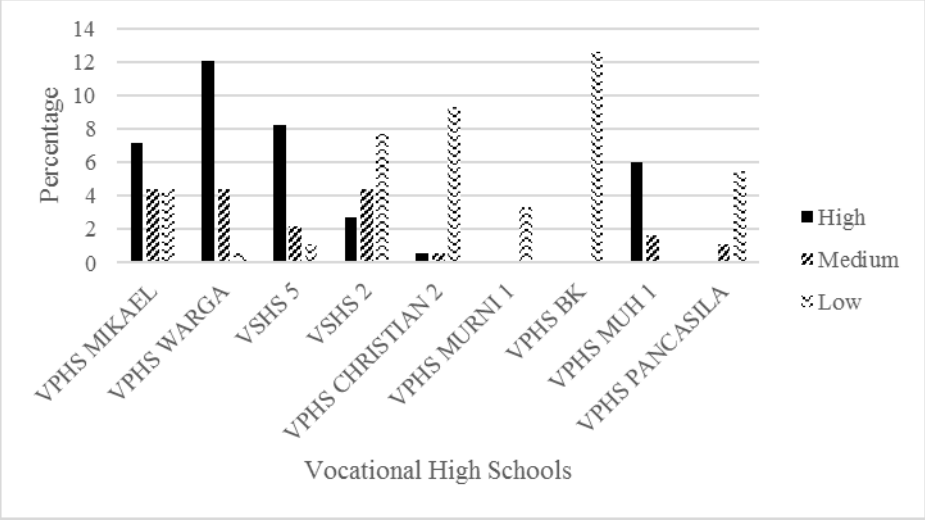

Figure 2. HOTS profile of Students of Vocational High Schools in Mechanical Engineering program in Surakarta

The result shows that SMK Warga Surakarta has a high level of HOTS. Meanwhile SMK Murni 1 Surakarta, SMK Bhineka Karya, and SMK Pancasila Surakarta did not achieve the high level. SMK Catholic St. Mikael Surakarta, SMK Warga Surakarta, and SMK 2 Surakarta achieved a moderate level of HOTS percentage at 4.40%. SMK Murni 1 Surakarta and SMK Bhineka Karya Surakarta did not achieve any moderate level HOTS percentage at 0%. Finally, SMK

Muhamadiyah 1 Surakarta did not achieve a low level of HOTS at 0%.

Obtaining the results of HOTS above relates to the work readiness of VHS students. Work readiness is affected by psychological, physical, and experiential factors [24], Furthermore attributed to HOTS indicators include analyzing, evaluating, and creating. Each of these indicators forms the activities and operational verbs that can ultimately be determined correlation to the work readiness of the students' VHS competence in the skill of the lathe machining. The matrix of correlation HOTS and work readiness was presented in Table 5.

Table 5. The Matrix of Correlation HOTS and Work Readiness

Thinking Skills	Thinking Skills Activities	Operational Verbs Thinking Skills	Job Duties
Analyzing	Differentiate between different concepts	Assess, compare, criticize, sort, differentiate, determine.	Competent to analyze problems when the machine was broken in the job
Evaluating	Correct a particular statement or choice by giving a reason	Evaluate, assess, criticize, make a choice, correlate, give an opinion	Competent to evaluate methods and work processes to achieve targets in the job
Creating	Create or develop new products, theories or perspectives based on learning	Assemble, design, plan, create, formulate	Competent to create or develop an innovation product in the job

Then, according to Table 5, the correlation matrix that have bben developed can be obtained by correlating the scores between work readiness and HOTS. These correlations are presented in Table 6.

Table 6. HOTS Score and Percentage of Work Readiness

Score Range	Average Work Readiness (%)
$X > 51.08$	77.03
$48.92 \leq X \leq 51.08$	69.27
$X < 48.92$	60.91

Learning in VHS emphasizes the ability to think, attitude and practice. Best practice abilities are balanced with good thinking skills [25]. The capability to think in accordance with the development of the 21st century is HOTS [11]. HOTS involves aspects of analyzing, evaluating, and creating [17]. Thinking skills support for best student practice skills.

Factors affecting HOTS in schools among others are media, models, and learning in schools [26]. Furthermore, different students' practice abilities are also influenced by the students' early skills. The result of HOTS distribution shows that the learning process in the school is very influential. The differences in HOTS evaluation is affected by approaches, models, media, and methods of the lesson thus the teacher needs to master the lesson in the class and able to arrange a lesson which improves the students' HOTS. It was affected by the students' input, lesson, and the enviromental study which did not adequately support the HOTS achievement [27].

The result of the study shows that the students who are in the high, moderate and low categories were 39.56%, 18.68%, and 41.75% respectively. This shows that the students' HOTS could still be improved so that the HOTS capability could be improved to a high level. The HOTS improvement is

taught and done by the teacher in schools. The teachers give a stimulus to the students through well-done lesson activities. The point of references includes; (a) emphasizing in ability to think, analyze, evaluate, and create through habituation of students' activities such as observation, collection, process, serve, and making conclusion, (b) giving question or facts which engage the students into thinking, (c) emphasizing the contextual lesson and continuing the study not only on the domain of knowledge but also until the ability is achieved so that they can use their knowledge to solve problems [28].

VHS students who are graduated should be ready to work, thus the capability to think was crucial and associated with the work readiness of VHS students [29]. Thinking activities is almost provision in work that uses thinking skills to solve the problem. Thinking activity is a mental activity intention and the ensuing job outcome from a mechanical engineering technician**.** A purposeful mental activity over which we have some power or control. Any mental activity that helps formulate or solve a problem, make a decision or fulfil a desire to understand [30]. Furthermore Woods [31] explained problem-solving as the process of obtaining a satisfactory solution to a novel problem, or at least a problem which the problem solver has not seen before.

Work readiness is influenced by psychological, physical, and experiential factors [32]. All three factors are related to the competent to analyze, evaluate, and create. The competent to analyze forms the work readiness in overcoming various problems when the machine cannot be operated. The competent to evaluate forms the work readiness in evaluating methods and work processes to achieve the targets. The competent to create a work preparedness in creating or developing an innovation product in the work. It is an important capability which helps the students to get into and participate actively in the world of work or industry.

One of the skills required in the world of industry is HOTS [33]. However, today's VHS graduates lack the ability of HOTS because they received too many lessons in hard skills and lacks the development of thinking skills. In other words, the development of HOTS in VHSs would not fulfill the requirements of the working world today, where the development and changes are very fast so that the graduates should be able to adapt with the working world which becomes more complex day by day[34].

Sala and Silva [19] stated that HOTS is one of the skills required for the students' work preparation because the world of the industry requires an individual who possesses adequate ability to analyze, evaluate, and create. The students' HOTS of VHS in Mechanical Engineering which is categorized as low is 41.75% of total students, the rest students are categorized as moderate and high. These results are in consistent with the statement from Kemendikbud [14] which stated that the majority of VHS graduates in Indonesia does not only lack the ability to adapt to the development of science and technology, but also lacks the ability to develop themselves and their career in the workplaces. The qualifications of prospective workers which is needed in the working world, apart from the scholarship and skill requirements, are a series of important intangible non-technical skill which is called soft skills, such as higher order thinking skills.

CONCLUSION

HOTS of vocational students in Mechanical Engineering program in Surakarta with the levels of high, moderate and low are 39.56%, 18.68%, and 41.76% respectively. Of the nine public and private VHSs, there are a few schools that managed to equip the students with HOTS, while there are some VHSs that are not able to equip the students with HOTS. VHSs that managed to equip students with HOTS are categorized as schools with standardized quality learning process. These results lead to the importance of supporting the students to achieve HOTS. The higher level of thinking effectively propmts the students' work readiness. This means that HOTS is related to psychological, physical, and experiential factors. Therefore, there needs to be a lesson where the HOTS can be developed to prepare the students in entering the working world.

REFERENCES

[1] A. Aksit, A. Aksit, B. Arpat, and V. R. Kalfa, "Analysis of the Contribution to Professional Knowledge of the Job Training Within the Student Perspective in the 3+1 Education Model - The Example of Honaz Vocational School," *Eur. Sci. Journal, ESJ*, vol. 13, no. 10, Jun. 2017.

[2] S. Rochmadi, "Industry Partnerships Learning Models for Surveying and Mapping of Vocational High Schools," *J. Pendidik. Teknol. dan Kejuru.*, vol. 23, no. 2, pp. 210–225, Oct. 2016.

[3] C. R. Finch and J. R. Crunkilton, *Curriculum Development in Vocational and Technical Education: Planning, Content, and Implement ation*. Allyn and Bacon, 1999.

[4] S. Rojuli, A. Rahayu, and Disman, "Observational Learning on Industry Work Practices toward Job Readiness.," *Educ. Res. Rev.*, vol. 12, no. 9, pp. 554–558, May 2017.

[5] A. Ambiyar, A. Yulastri, M. Yupelmi, and P. Paryono, "Relevance of the Productive Course of Hair Beauty in Vocational High Schools to Industry Needs," *J. Pendidik. Teknol. dan Kejuru.*, vol. 24, no. 1, pp. 125–131, Apr. 2018.

[6] P. Sudira, *TVET abad XXI; Filosofi, Teori, Konsep dan Strategi pembelajaran Vokasional*. Yogyakarta: UNY Press, 2016.

[7] E. S. Danang Y.P, A. Sonhadji, "Pergeseran Paradigma Abad 21 pada Pembelajaran di SMK Paket Keahlian Teknik Pemesinan," in *National Seminar on Vocational Education in Challenges of 21st Century Vocational Education*, 2016, pp. 165–175.

[8] N. M. S. Anggraeni and N. N. K. Yasa, "E-Service Quality terhadap Kepuasan dan Loyalitas Pelanggan dalam Penggunaan Internet Banking. Jurnal Keuangan dan Perbankan," *J. Keuang. dan Perbank.*, vol. 16, no. 2, pp. 293–306, 2012.

[9] A. O. Ayeni, "World Wide Comparism of Technical and Vocational Education: Lessons for Nigerian Technical and Vocational Education Sector," *J. Educ. Pract.*, vol. 6, no. 30, pp. 103–110, 2015.

[10] A. Pritchard, *Ways of Learning*. London & New York: Routledge, 2014.

[11] S. Narayanan and M. Adithan, "Analysis Of Question Papers In Engineering Courses With Respect To Hots (Higher Order Thinking Skills)," *Am. J. Eng. Educ.*, vol. 6, no. 1, p. 1, Jun. 2015.

[12] G. M. Saido, S. Siraj, A. B. Nordin, and O. S. Al Amedy, "Higher Order Thinking Skills among Secondary School Students in Science

Learning," *Malaysian Online J. Educ. Sci.*, vol. 3, no. 3, pp. 13–20, 2015.

[13] D. Shukla and A. P. Dungsungneon, "Student's Perceived Level and Teachers' Teaching Strategies of Higher Order Thinking Skills; A Study on Higher Educational Institution in Thailand," *J. Educ. Pract.*, vol. 12, no. 211–219, 7AD.

[14] Ministry of Education and Culture, *Permendikbud No. 58 tahun 2014 tentang Panduan Pengembangan Materi Pembelajaran Kurikulum 2013*. Indonesia, 2014.

[15] C. Murphy, L. Bianchi, J. McCullagh, and K. Kerr, "Scaling Up Higher Order Thinking Skills and Personal Capabilities in Primary Science: Theory-Into-Policy-Into-Practice," *Think. Ski. Creat.*, vol. 10, pp. 173–188, Dec. 2013.

[16] N. Mohd Darby and A. Mat Rashid, "Critical Thinking Disposition: The Effects of Infusion Approach in Engineering Drawing," *J. Educ. Learn.*, vol. 6, no. 3, p. 305, May 2017.

[17] B. Tanujaya, J. Mumu, and G. Margono, "The Relationship between Higher Order Thinking Skills and Academic Performance of Student in Mathematics Instruction," *Int. Educ. Stud.*, vol. 10, no. 11, p. 78, Oct. 2017.

[18] D. M. Putri, Isnandar, and A. N. Handayani, "SEMINAR NASIONAL PENDIDIKAN KEJURUAN 'Tantangan Pendidikan Kejuruan Abad XXI,'" in *Overview Karakter Soft Skillls DU/DI Terhadap Kesiapan Kerja Siswa SMK Menghadapi Mea*, 2016.

[19] H. Sala and J. I. Silva, "Labor Productivity and Vocational Training: Evidence from Europe," *J. Product. Anal.*, vol. 40, no. 1, pp. 31–41, Aug. 2013.

[20] M. Lopez, J., Whittington, Susie, "Higher-order Thinking in a College Course: A Case Study," *North Am. Coll. Teach. Agric.*, no. December 2001, pp. 22–29, 2001.

[21] C. C. Chinedu, O. S. Olabiyi, and Y. Bin Kamin, "Strategies for improving higher order thinking skills in teaching and learning of design and technology education," *J. Tech. Educ. Train.*, 2015.

[22] R. Tursina, "Keterampilan Berpikir Tingkat Tinggi Fisika Pendidik Di Sman Sekota Bima NTB," Universitas Negeri Yogyakarta, 2015.

[23] S. Azwar, *Penyusunan Skala Psikologi*, II. Yogyakarta: Pustaka Pelajar, 2015.

[24] E. Putriatama, S. Patmanthara, and R. M. Sugandi, "Work Readiness by Vocational School Graduates Viewed from Industrial Work Practice's Experience and Vocational Skills," in *AIP Conference Proceedings*, 2016, vol. 1778, no. 1, p. 30040.

[25] M. Y. A. Hadi, R. Hassan, A. R. A. Razzaq, and M. Z. Mustafa, "Application of Thinking Skills in Career: A Survey on Technical and Vocational Education Training (TVET) Qualification Semi-professional Job Duties," *Procedia - Soc. Behav. Sci.*, vol. 211, pp. 1163–1170, Nov. 2015.

[26] Y.-T. C. Yang, "Virtual CEOs: A Blended Approach to Digital Gaming for Enhancing Higher Order Thinking and Academic Achievement among Vocational High School Students," *Comput. Educ.*, vol. 81, pp. 281–295, Feb. 2015.

[27] P. Budsankom, T. Sawangboon, S. Damrongpanit, and J. Chuensirimongkol, "Factors Affecting Higher Order Thinking Skills of Students: A Meta-Analytic Structural Equation Modeling Study," *Educ. Res. Rev.*, 2015.

[28] H. Yusmanto, "Meningkatkan Higher Order Thinking Skills (HOTS) dan

Hasil Belajar IPS melalui Penerapan Model Pembelajaran Kooperatif Carousel Feedback dan Round Table. (Studi pada SMPS Islam Terpadu Darul Azhar Kabupaten Aceh Tenggara). Thesis not published," Universitas Negeri Malang, 2017.

[29] U. M. Jannah, H. Suswanto, and A. N. Handayani, "Vocational High School Student's Readiness to Work in Internet Service Provider Enterprise: Based on Mastery Vocational Competence, Internship and Job Interest," in *AIP Conference Proceedings*, 2016.

[30] V. R. Ruggiero, *The Art of Thinking. A Guide to Critical and Creative Thought*, 9th ed. Essex, UK: Longman Publishing Group, 2008.

[31] D. R. |An. O. Woods, "Teaching Problem Solving Skills.," *Eng. Educ.*, vol. 66, no. 3, pp. 238–243, 1975.

[32] S. Sandirasegarane, S. Sutermaster, A. Gill, J. Volz, and K. Mehta, "Context-Driven Entrepreneurial Education in Vocational Schools," *Int. J. Res. Vocat. Educ. Train.*, vol. 3, no. 2, pp. 106–126, Aug. 2016.

[33] E. Suprapto, F. Fahrizal, P. Priyono, and B. K., "The Application of Problem-Based Learning Strategy to Increase High Order Thinking Skills of Senior Vocational School Students," *Int. Educ. Stud.*, vol. 10, no. 6, p. 123, May 2017.

[34] C. Hixson and M. C. Paretti, "Unpacking Why Engineering Faculty Members Believe Entrepreneurship Is Valuable for Engineering Education," *Adv. Eng. Educ.*, no. Fall 2018, 2018.