International Journal of Business, Law, and Education
Volume 4, Number 2, 2023

The Delphi-Goal Oriented Evaluation Model to Implementing Teaching Factory in Vocational High School at Bogor Regency

Lisna Nurrohmawati[1], Yuliatri Sastrawijaya[2], Efri Sandi[3]
Universitas Negeri Jakarta[123]
Correspondence: lisna.nurrohmawati@gmail.com

Abstract
Learning with teaching factory has a focus point, namely the application of competency-based learning and production-based learning with link and match between Vocational High Schools and industry. This research is a mixed method research. This study uses the Goal Oriented program evaluation model with Delphi method to obtain the opinion of experts to determine the standard of assessment that will be used to measure the implementation of teaching factory. The Goal Oriented evaluation model is used to measure program achievement based on the objectives of the teaching factory program applied to the Vocational High School level. The research was conducted at vocational high school that hold multimedia expertise competencies in Bogor Regency. The research sample consisted of eleven schools with an average overall result in Bogor Regency was 82.23. Based on these values, it can be concluded that the implementation of the teaching factory in Bogor Regency is well implemented.

Keywords
Competency;
Multimedia;
Teaching Factory

INTRODUCTION

Teaching factory is a learning model by applying competency-based learning processes and production-based learning. Achievement of competencies obtained by students is through production activities that refer to standards and procedures that apply in the industry.

Bogor Regency as the region with the largest number of Vocational High School in West Java Province. The number of Vocational High Schools that hold Multimedia expertise competence is 35. Until now, the implementation of the teaching factory in Bogor Regency has never been evaluated. Therefore, this study aims to find a tool that is used to evaluate the application of teaching factory-based learning that is implemented in Multimedia competency competency vocational schools in the Bogor Regency area using the goal-oriented evaluation model and the Delphi method.

Several schools in Indonesia have implemented a teaching factory-based learning pattern. One of them is in the South Jakarta area. The results of research conducted by Putri Ghanim Septia Habiba show that teaching factories run well in schools because schools have adequate practice areas and are supported by competent human resources in their fields(Casmudi et al., 2022). Schools with expertise in accounting management have a business center as a place for students to practice according to the world of work. Unlike other regions, Thomas Sukardi and Ibnu Siswanto stated that several RSBI schools in the Special Region of Yogyakarta apply teaching factories. The results of the study show that there are supporting and inhibiting factors in the implementation of teaching factory. One of the inhibiting factors is the lack of cooperation between schools and industry so that the marketing of student competencies and the products produced are not in accordance with industry standards(Diwangkoro & Soenarto, 2020). Furthermore, in different places, research on teaching factories in Malang City also shows that there are obstacles to

implementing teaching factories due to industrial relations that are less than optimal. So that the alternative solution to this problem is to build intensive communication with the industry so that the results of implementing the teaching factory can be maximized. The hope for implementing the teaching factory is that students will have competencies according to industry needs(Renita et al., 2020).

METHOD

The research was conducted using the mixed method type, namely a combination of qualitative and quantitative. The program evaluation model used in this study is a goal oriented evaluation model. According to Ralph W Tyler, goal oriented has stages consisting of setting general goals, grouping targets, determining situations for achieving goals, developing assessment methods, collecting data and then comparing data with characters that match the goals. Based on the concept presented by Tyler, it can be concluded that the use of a goal-oriented evaluation model is devoted to obtaining measurements by comparison based on predetermined goals. In the research conducted, goal oriented will be carried out in five technical processes namely Developing Evaluation Objectives, Composing Instrument, Share Instrument, Data Analysis, Giving Advice Recommendation Result. In Developing Evaluation Objectives step, its consist determining formulated goals and classifiying objectives. In Composing Instrument step, its consist formulate goals on measurable behavior, determining the time, and select and develop method. In Share Instrument step, its consist of collect data, in Data Analysis method, its consist of compate performance data with objectives. In Giving Advice Recommendation Result its describe the measurement results are used as an evaluation of each skill competence to make improvement. In the research, Goal Oriented Evaluastion Model will The following are the stages in the goal-oriented evaluation model in the research conducted.

1. Developing Evaluation Objectives

This stage is by applying the Delphi method. The Delphi method is a method for obtaining opinions from experts to predict future needs. Expert selection instrument for Delphi method is selected by several criteria. First, by the personal criteria they have experience in their field. By the education criteria they have educational background in accordance with the field and they maintain competence. By the experience criteria, they must carry out production activies in its field continuously, have Experience as quality control, understand the concept of teaching factory, and have experience as a teaching factory actor. The expert panelist is Mr. Saiful Bahri, M.Pd as national teaching factory resource person from SMKN 1 Cileungsi, Mr. Heri hermawan, S.Kom as national teaching factory resource person from SMKN 1 Gunung Putri, Mr. Pahala Basuki as industrial practitioner from BrandInc, and Mr. Ario Faisal as industrial practitioner from vertexdotcom. Each of them has met the criteria according to the expert criteria that have been described. The standard for evaluating program evaluation in this study is based on the teaching factory governance guidelines from the Ministry of Education and Culture. The parameter of the standard is Management, Workshop or Laboratory, Learning Pattern, Marketing Promotion, Product and Service, Human Resources, and Industrial Relation. Every parameter, is have several specific sub parameter in accordance with the Evaluation criteria for the Teaching

Factory program from Governance of Teaching Factory Implementation.(Khurniawan, 2016).

The results of the expert panelist discussion show that the teaching factory assessment standards apart from the Teaching Factory Governance Guidelines from the Ministry of Education and Culture, are also adjusted to the needs of the world of work in their field. the addition of parameters carried out by experts, namely competency.

Table 1. Teaching Factory Parameter

Parameter	Sub Parameter
Management	a. Teaching factory organizational structure. b. Teaching factory administration
Workshop or Laboratory	a. Arranged for production activities according to the teaching factory. b. The facilities are close to industry standards. c. Production equipment in good condition, ready to use, and regular maintenance, repair, and calibration (MRC) of practical equipment is carried out. d. The ratio of tools to students is 1:1. e. Have a standard operating procedure (POS) for the operation of practice tools.
Learning Pattern	a. Having cooperation with industry as a reference b. Practical learning approaches industry standards. c. Use jobsheet in learning d. Impact on the application of industrial culture in schools. e. Block system learning. f. Have a teaching factory-based learning device.
Marketing Promotion	a. Has promotional media. b. Having communication media with clients and the public regarding product/service information and information facilities.
Product and Service	a. Made in accordance with the basic competencies of productive subjects. b. Made in accordance with the types of products produced by the industry. c. Have quality control. d. Products/services are produced on time. e. Accepted by the market. f. Have benefits or uses. g. On a regular basis.
Human Resources	a. Total Human Resources (HR) to meet the needs. b. Have knowledge about the types of products c. Has attended an internship program in the industry. d. Industrial practitioners are invited to schools to monitoring. e. Apply industrial culture f. Accordance with standard operating procedures. g. Have pedagogical abilities to teach.

Parameter	Sub Parameter
	h. Have professional skills in multimedia i. The ability to carry out the production process of multimedia products or services. j. Consist of teachers and professionals
Industrial Relation	a. There are innovations made to the products/services produced by the teaching factory compared to the products on the market. b. The application of a teaching factory will increase the range of school-industry collaboration. c. Providing internship opportunities to productive teachers in industries in collaboration with schools.
Competency	a. Learning activities produce competence for students b. The competencies possessed by students are close to industry standards c. Competence possessed by through the production of products or services carried out d. Competence possessed by students by continuing to carry out the production process at the business center e. Competence possessed by participating in student competency competitions.

2. Composing Instrument

The instruments are arranged based on the grid that has been described in the previous chapter, namely the instrument consists of three types which include observation instruments, interview instruments, and questionnaire instruments. The following is the instrument grid:

Table 2. Observation instrument grid

No	Indicator	Description
1.	Workshop or Laboratory	Observation of the condition of the practice room used in learning activities.
2.	Learning patterns	Observation of learning patterns carried out by the teacher to students.
3.	Human resources	Observation of the availability of existing human resources in competency skills.
4.	Product and service	Observation on the results of products and services in teaching factory practice activities.

Interview instrument:

Table 3. Interview instrument grid

No	Indicator	Description
1.	Management	Organizational structure, jobdesk, performance standard operational procedure, transaction reports
2.	Marketing	Clarity of targets, market segments
3.	Industrial relation	Collaboration that has been established in the industry

Questionnaire instrument:

Table 4. Questionnaire instrument grid

No	Field	Parameter
1.	Management Supervision	Management Marketing Industrial relation
2.	Learning Process	Workshop or Laboratory Learning patterns Human resources Product and service
3.	Result	Competency

3. Share Instrument

This step is the process of collecting data in sample schools. The school sample is eleven schools in Bogor Regency which carry out teaching factory-based learning. Data collection was carried out from May to June 2023. Each sample school's are SMKN 1 Cibinong, SMKS 2 Triple J, SMKS Insan Kreatif, SMKS PGRI 2 Cibinong, SMKS Amalian Ciawi, SMKS Dewantara, SMKS Taruna Terpadu, SMKS Generasi Madani, SMKS Metland School, SMKN 1 Bojonggede, and SMKS Pelita Nusantara.

4. Data Analysis

Analysis of the qualitative data obtained from the Delphi method was then made into an instrument for assessing the application of the teaching factory. Furthermore, the results of data collection from each school were analyzed using descriptive statistical techniques. Visualization of the final results in the form of value recapitulation tables and radar charts for modeling. Overall these values in each school will be averaged to obtain the overall assessment results from Bogor Regency.

5. Giving Advice Recommendation Result

From each of these schools, the achievement value was obtained from the application of the teaching factory. Achievement scores have been obtained from each field, so that these values can be used by schools. Recommendations that can be given are to make improvements in each field by looking at which fields are lacking in value. The rating scale used to assess is in accordance with the governance of the teaching factory from the Ministry of Education and Culture and expert panelist discussions conducted using the Delphi method, the rating range used is 90-100 : very good, 80-89 : good, 70-79 : enough, 60-69: less, and <60 : very less.

RESULTS AND DISCUSSION

The results of data collection from sample schools were then analyzed using data analysis techniques for quantitative data. The measurement results will be presented in the form of descriptive statistical analysis. Data is presented using descriptive tables and bar charts. Following are the results of data collection from each sample school:

Table 5. The Result of Each School

No	School ImplementingTeaching Factory	Total Result
1	SMKN 1 Cibinong	87.47
2	SMKS 2 Triple J	85.04
3	SMKS Insan Kreatif	81.07
4	SMKS PGRI 2 Cibinong	79.14

No	School ImplementingTeaching Factory	Total Result
5	SMKS Amalian Ciawi	83.53
6	SMKS Dewantara	83.87
7	SMKS Taruna Terpadu 1	81.53
8	SMKS Generasi Madani	78.74
9	SMKS Metland School	81.79
10	SMKN 1 Bojonggede	84.13
11	SMKS Pelita Nusantara	78.26
	Average	**82.23**

Based on the table above, the result is that the application of teaching factory with the highest score is SMKN 1 Cibinong. Next, Triple J 2nd Vocational School, then Bojonggede 1st Vocational School, Dewantara Vocational School, Amaliah Ciawi Vocational School, Metland School Vocational School, Integrated Youth Vocational School 1, Creative Insan Vocational School, Cibinong PGRI 2 Vocational School, Generation Madani Vocational School, and finally, the Pelita Nusantara Vocational School. The achievement of each of these schools is then calculated on average to obtain the value of the teaching factory implementation at SMKs that organize multimedia expertise competencies in Bogor Regency. The average calculation result is 82.23 which means good.

Based on the data above, the following explanation is the result of measurements at each school.

1. SMKN 1 Cibinong

The total value of achieving the teaching factory implementation is 87.47 which means good.

Table 6. Result of SMKN 1 Cibinong

Parameter	Result
Management	86.67
Marketing Promotion	86.67
Industrial Relation	86.25
Workshop or Laboratory	86.25
Learning Pattern	86.92
Human Resources	88.33
Product and Service	88.44
Competency	88.44
Average	87.47

In the field of management, the score is 86.67 with a good description. In the field of marketing, 86.67 is of good value, meaning that they have been able to do marketing well. In the field of industrial relations it is 86.25 with good value, meaning that the industrial relations department is able to establish continuous cooperation with industrial partners. In the field of practice room it is 86.92 with good value, meaning that the supporting facilities in the practice room are suitable for teaching factory activities. In the field of learning patterns, it is 88.33 which is of good value because the application of the block schedule can be applied, namely blocks every two weeks. In the field of Human Resources (HR) it is 88.44. In the field of products and services, it is 88.44 with good value because the products from the teaching factory are directly monitored by partner industries, namely PT. Indocement Tunggal Prakarsa Tbk and the head of multimedia expertise competence and in the field of competence is 88.00 good and these

competencies are maintained with various products made at the business center and participating in various student competency competitions.

2. SMKS 2 Triple J

The total value of teaching factory implementation is 85.04 which means good.

Table 7. Result of SMKS 2 Triple J

Parameter	Result
Management	80.00
Marketing Promotion	81.67
Industrial Relation	88.75
Workshop or Laboratory	84.49
Learning Pattern	85.00
Human Resources	87.22
Product and Service	89.22
Competency	84.00
Average	85.04

In the field of management, the score is 80.00 which means good. In the field of marketing, it is 81.67 which means good, because it gets continuous orders from PT. Astra Graphia Tbk, then in the field of industrial relations is 88.75 which means good because industrial relations are well established with partner industries.

In the field of practical space, it is 84.49, which means it is good because the equipment is supported by the partner industry. In the field of learning patterns it is 85.00 which means good because industry standards are applied to the learning process. In the field of Human Resources (HR) it is 87.22, then in the field of products and services it is 89.22 which means good because products are directly used by partner industries and lastly in the field of competence is 84.00 which means good.

3. SMKS Insan Kreatif

The total value of teaching factory implementation is 81.07 which means good.

Table 9. Result of SMKS Insan Kreatif

Parameter	Result
Management	80.00
Marketing Promotion	81.67
Industrial Relation	81.67
Workshop or Laboratory	80.26
Learning Pattern	81.67
Human Resources	81.67
Product and Service	81.67
Competency	80.00
Average	81.07

In the field of management, the score is 80.00, which means it is good, however, it still needs to be strengthened in the organizational structure. In the field of marketing, it is 81.67 which means good. In the field of industrial relations it is 81.67 which means good. Furthermore, in the field of practical space it is 80.26 which means good, the facilities owned are suitable for the practical needs of

students. In the field of learning patterns, it is 81.67 which means good, the learning tools are in accordance with the needs of teaching factory-based learning. In the field of Human Resources (HR) it is 81.67 which means good. In the field of products and services it is 81.67,which mean is good. In the field of competence, it is 80.00.

4. SMKS PGRI 2 Cibinong

The total value of implementing the teaching factory is 79.14 which means it is enough.

Table 10. Result of SMKS PGRI 2 Cibinong

Parameter	Result
Management	73.33
Marketing Promotion	73.33
Industrial Relation	81.67
Workshop or Laboratory	80.64
Learning Pattern	80.00
Human Resources	79.67
Product and Service	84.44
Competency	80.00
Average	79.14

In the field of management, the score is 73.33, which means that it is enough. In the field of marketing, it is 73.33, which means that it is enough, it should be improved so that the marketing of teaching factory products will be even better. In the field of industrial relations it is 81.67 which means good.

In the field of practical space, it is 80.64 which means good. In of learning patterns it is 80.00, meaning that the learning is carried out according to industry standards even though it has not been able to apply the block schedule system. In the field of Human Resources (HR) it is 79.67 which means it is enough. The thing that needs attention is that existing Human Resources (HR) can take part in teacher apprenticeship programs in industry. In the field of products and services it is 84.44 which means good and in the field of competence it is 80.00 which means good.

5. SMKS Amaliah Ciawi

The total value of teaching factory implementation is 83.53 which means good.

Table 12. Result of SMKS Amaliah Ciawi

Parameter	Result
Management	80.00
Marketing Promotion	81.67
Industrial Relation	83.75
Workshop or Laboratory	85.26
Learning Pattern	85.00
Human Resources	84.89
Product and Service	83.67
Competency	84.00
Average	83.53

In the field of management, the score is 80.00 which means good,. In the field of marketing, it is 81.67, which means it is good, that is, it can already take advantage

of the promotional media that is owned well, then in the field of industrial relations, it is 83.75, it means it is good, it already has continuous cooperation with industry. In the field of practical space, it is 85.26 which means good, the practice facilities are close to industry standards, especially computers with modeling and animation specifications. In the area of learning pattern is 85.00 which means good. In the field of Human Resources (HR) it is 84.89 which means good. In the field of products and services, it is 83.67 which means good. In the field of competence, it is 84.00 which means good. Student competencies are close to industry standard requirements.

6. SMKS Dewantara

The total value of teaching factory implementation is 83.87 which means good.

Table 13. Result of SMKS Dewantara

Parameter	Result
Management	80.00
Workshop or Laboratory	81.67
Learning Pattern	84.17
Marketing Promotion	82.69
Product and Service	88.33
Human Resources	81.67
Industrial Relation	88.44
Competency	84.00
Average	83.87

In the field of management, the score is 80.00 which means good. In the field of marketing, it is 81.67 which means good. In the field of industrial relations it is 84.17 which means good, the school already has continuous product orders. In the field of practice space, it is 82.69, meaning that the practice facilities are close to industry standards. In the area of learning pattern is 88.33 which means good, has applied industrial culture to learning activities.

In the field of Human Resources (HR) it is 81.67 which means good, then in the field of products and services it is 88.44 which means good. In the field of competence, it is 84.00 which means good, student competence is maintained by having a business center and participating in various student competency competitions.

7. SMKS Taruna Terpadu 1

The total value of teaching factory implementation is 81.53 which means good.

Table 14. Result of SMKS Taruna Terpadu 1

Parameter	Result
Management	80.00
Marketing Promotion	86.67
Industrial Relation	79.58
Workshop or Laboratory	82.69
Learning Pattern	78.33
Human Resources	77.33
Product and Service	83.67
Competency	84.00
Average	81.53

In the field of management, a score of 80.00 means good. In the field of marketing, a score of 86.67 means that the promotional media that is owned can function effectively. In the field of industrial relations, it received a score of 79.58, meaning that it is enough which later needs to be improved so that it can obtain continuous orders from the industry.

In the field of practice space, it has a value of 82.69 which means good. In learning patterns the score is 78.33 means that it is needs to be further improved. In the field of Human Resources (HR) is 77.33, it needs to take part in teacher internships in industry. In the field of products and services, a score of 83.67 means good, the products and services made are of good quality. In the field of competence, a score of 84.00 means good.

8.SMKS Generasi Madani

The total value of implementing the teaching factory is 78.74 which means it is enough.

Table 15. Result of SMKS Generasi Madani

Parameter	Result
Management	73.33
Marketing Promotion	73.33
Industrial Relation	79.58
Workshop or Laboratory	83.97
Learning Pattern	78.33
Human Resources	85.67
Product and Service	79.67
Competency	76.00
Average	78.74

In the field of management, the score is 73.33, which means that it is enough. In the field of marketing, it is 73.33, meaning that it is quite hoped that the promotional media they have can be used more effectively. In the field of industrial relations, it is 79.58, which means it is enough, it can be improved by establishing cooperation with the industry so that it can place continuous orders for products.

In the field of practical space, it is 83.97 which means good. In the field of learning patterns it is 78.33 which means it is enough, it can be improved by implementing a block schedule system. In the field of Human Resources (HR) it is 85.67, which means is good. In the field of products and services it is 79.67 it can be improved further and in the field of competence it is 76.00, it can be increased again so that student competencies are close to industry standards.

9. SMKS Metland School

The total value of implementing the teaching factory is 81.79 which means it is good.

Table 16. Result of SMKS Metland School

Parameter	Result
Management	86.67
Marketing Promotion	76.67
Industrial Relation	78.75
Workshop or Laboratory	83.97
Learning Pattern	83.33

Human Resources	81.67
Product and Service	79.67
Competency	84.00
Average	81.79

In the field of management, the score is 86.67 which means good because teaching factory learning activities have a good impact on schools. In the field of marketing, it is 76.67, meaning that it is quite hoped that it will be further improved so that product marketing is better. In the field of industrial relations, it is 78.75, which means it is enough.
In the field of practical space is 83.59 which means good. In the area of learning pattern is 83.33 which means good, the application of industrial culture has been carried out. In the field of Human Resources (HR) it is 81.67 which means good, because the Human Resources (HR) who teach come directly from industry. In the field of products and services it is 79.67 and in the field of competence it is 84.00 which means good.

10.SMKN 1 Bojonggede

The total value of teaching factory implementation is 84.13 which means good.

TABLE 17. Result of SMKN 1 Bojonggede

Parameter	Result
Management	77.67
Marketing Promotion	73.33
Industrial Relation	86.25
Workshop or Laboratory	86.54
Learning Pattern	83.33
Human Resources	86.44
Product and Service	86.44
Competency	88.00
Average	84.13

In the field of management, the score is 77.67. Improvements can be made by implementing job descriptions for each managing officer. In the field of marketing it is 78.33 which means it is enough, it can be improved by using promotional media to make it more effective. In the field of industrial relations it is 86.25 which means good.
In the field of practical space, it is 86.54 which means good. In the field of learning patterns, it is 83.33 which means good, learning activities can take place well to lead students to acquire the competencies to be achieved. In the field of Human Resources (HR) it is 86.44 which means good. In the field of products and services, it is 86.44 which means good. In the area of competency, it is 88.00, meaning that student competency is well maintained by having a business center and participating in student competency competitions.

11. SMKS Pelita Nusantara

The total value of implementing the teaching factory is 78.26, which means it is enough.

TABLE 18. Result of SMKS Pelita Nusantara

Parameter	Result
Management	76.67
Marketing Promotion	73.33
Industrial Relation	79.58
Workshop or Laboratory	80.26
Learning Pattern	73.33
Human Resources	80.44
Product and Service	82.44
Competency	80.00
Average	84.13

In the field of management, the score is 76.67. In the field of marketing, it is 73.33, the promotional media that is owned has not been able to be utilized effectively. In the field of industrial relations, it is 79.58, which means it is enough, it can be increased by looking for partner industries that can order products continuously.
In the field of practice room it is 80.26 which means good. In the area of learning patterns it is 73.33 which means it is enough, it can be improved by implementing a block schedule so that learning can be maximized. In the field of Human Resources (HR) it is 80.44 which means it is good. In the field of products and services it is 82.44, the products and services produced are of good quality and in the field of competence it is 80.00 which means good.

CONCLUSION

The achievement of high scores in the application of teaching factory is supported, among other things, by synchronizing the curriculum between schools and industry, so that schools know the types of competencies students must master. In addition, the types of products or services that students need to practice or produce are obtained. By carrying out the production process, students gain competence. To be able to synchronize the curriculum, the school's industrial relations department must collaborate with partner industries that are in accordance with the competency of multimedia expertise. Human Resources (HR) are needed, namely teachers to take part in teacher apprenticeship programs in industry. The production process to obtain these competencies is carried out in classroom learning activities by applying a work culture and standard operating procedures (SOP) for making products in accordance with the industry. Then it is very important that schools have equipment that is close to industry standards as a practice facility for students. For the fulfillment of these tools, it can be sourced from government assistance, procurement from schools, as well as grants from industry. In order for production activities carried out by students to be focused, not interrupted by general or normative and adaptive subjects, it is necessary to implement a block schedule system. In addition, the purpose of implementing a block scheduling system is to optimize owned facilities. Ideally, so that the implementation of learning activities can be maximized, the ratio of tools to students is 1: 1.

The results of the products and services made by these students, if they are not orders from clients, then they are the remnants of the learning process, so that these results are not wasted, promotion of these products can be carried out to the

public, provided that these products have use value and quality meets the standards monitored by quality control. Quality control for products ordered by the industry is directly from the industry, while for products made by students at school to achieve competence is the head of expertise competency

Acknowledgment
This research was carried out with the help of the Regional 1 Education Office, West Java Province, besides that, eleven sample schools were the object of research. Guidance was also provided by Mrs. Yuliatri Sastrawijaya, Mr. Efri Sandi, Mr. Soeprijanto, and Mr. C. rudy prihantoro. thanks are given to them.

REFERENCE

Casmudi, Sugianto, Tasha Maulida, D., & Angga, H. H. (2022). Implementation of Teaching Factory Vocational School of Center Of Excellence (PK) (Case Study of Learning Aspects of the Culinary and Clothing Expertise Program at SMK Negeri 4 Balikpapan). Budapest International Research and Critics Institute-Journal, 5(2), 11033–11045. https://doi.org/10.33258/birci.v5i2.4921

Crossover of Audit and Evaluation Practices: Challenges and Opportunities. (2020). United Kingdom: Taylor & Francis.

Destiana, B., & Utami, P. (2017). Urgensi Kompetensi Pedagogik Guru Vokasional Pada. Elinvo (Electronics, Informatics, and Vocational Education), 2(2), 211–222.

Diwangkoro, E., & Soenarto, S. (2020). Development of teaching factory learning models in vocational schools. Journal of Physics: Conference Series, 1456(1). https://doi.org/10.1088/1742-6596/1456/1/012046

Hasson, F., McKenna, H. P., Keeney, S., McKenna, H. (2011). The Delphi Technique in Nursing and Health Research. United Kingdom: Wiley.

Kasman, T. (2017). Tatakelola Pelaksanaan Teaching Factory. In Jurnal Pendidikan dan Pembelajaran (Vol. 6).

Kementerian Pendidikan dan Kebudayaan. (2016). Panduan Pelaksanaan Teaching Factory Direktorat Pembinaan Sekolah Menengah Kejuruan. Jakarta : Kemendikbud.

Khurniawan, A. Wi. (2016). Grand Design Pengembangan Teaching Factory dan Techopark di SMK. In Jurnal Pendidikan dan Pembelajaran (Vol. 6).

Lestari, Suharno. Ngatou Rohman.(2014). Efektivitas Pelaksanaan Teaching Factory Siswa Sekolah Menengah Kejuruan (SMK) Di Solo Technopark.

Makhbubah, Eliza (2020). Pembelajaran Teaching Factory (TEFA) berbasis unit produksi untuk meningkatkan semangat kewirausahaan siswa kelas XI SMK Negeri 6 Semarang. Universitas Negeri Semarang.

Manalu, Sanggam, (2017). Tata Kelola Pelaksanaan Teaching Factory. Jakarta: Direktorat Pembinaan Sekolah Menengah Kejuruan Kemdikbud.

Mariyaningsih, Nining. (2016). Evaluasi Program Pengembangan SMK Rujukan Di SMK Negeri 2 Salatiga dengan model CIPP. Universitas Kristen Satya Wacana Salatiga

Martawijaya, D. H. (2011). Model pembelajaran teaching factory untuk meningkatkan kompetensi siswa dalam mata pelajaran produktif, (229).

Mourtzis, D., Panopoulos, N., Angelopoulos, J., Zygomalas, S., Dimitrakopoulos, G., & Stavropoulos, P. (2021). A Hybrid Teaching Factory Model for Supporting the

Educational Process in COVID-19 era. Procedia CIRP, 104, 1626–1631. https://doi.org/10.1016/j.procir.2021.11.274

Musa. (2005). Evaluasi Program Pembelajaran dan Pemberdayaan Masyarakat. Bandung: Y-Pin Indonesia

Novalinda, Rina Ambiyar, Fahmi Rizal. (2020). Pendekatan Evaluasi Program Tyler : Goal Oriented. H.137-146 https://www.researchgate.net/publication/342239854_PENDEKATAN_EVALUASI_PROGRAM_TYLER_GOAL-ORIENTED

Renita, Purnomo, Widiyanti, & Dika, J. W. (2020). Studi Tentang Pelaksanaan Teaching Factory Smk Di Kota Malang (Studi Multi Kasus) a Study of the Vocational High School Teaching Factory in Malang (Multi-Case Study). Jurnal Pendidikan Teknik Mesin, 7(2).

Risnawan. (2019). Manajemen Teaching Factory Dalam Upaya Pengembangan Mutu Pembelajaran di SMK. Media Manajemen Pendidikan Volume 2 No. 1 Juni 2019.

Rizky, Dyah Ayu Fladya , Marji, dan Tuwoso. (2018). Pengaruh Dukungan Industri terhadap Keberhasilan Siswa Melaksanakan Teaching Factory. Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan Volume: 3 Nomor: 6 Bulan Juni Tahun 2018 Halaman: 799—805.

Rusmulyani, R. (2020). Technical Vocational Education And Training (Tvet) Innovation Dengan Model Pelatihan Berbasis Kompetensi Dalam Pengembangan Soft-Skill Sumber Daya Manusia. Jurnal Inovasi Penelitian, 1(8), 1495-1506. https://doi.org/10.47492/jip.v1i8.318

Schlattmann, Siriphorm. (2017). School in Factory (SIF): an approach of Work-integrated Learning in Thailand. The Online Journal for Technical and Vocational Education and Training in Asia. April 2017. https://tvet-online.asia/issue/9/phalasoon-tvet9/