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TARBAWI
Jurnal Keilmuan Manajemen Pendidikan

Tarbawi: Jurnal Keilmuan Manajemen Pendidikan
p-ISSN: 2442-8809 | e-ISSN: 2621-9549
Vol. 7, No. 05, 2021, 269-282

Implementation of Total Quality Management (TQM) on Teaching Factory (TEFA) Vocational Middle School in Bogor District

Tjipto Djuhartono, Prasetio Ariwibowo, Lubban Anwari Alhamidi

[1,2]*Economic Education Study Program, Indraprasta University PGRI, Jakarta*
[3]*English Study Program, Indraprasta University PGRI, Jakarta*
e-mail: tjiptodjuhartono@gmail.com, Wibowoprasetio648@yahoo.com, lubbanalhamidi@yahoo.com

Submitted: 15-06-2020 Revised: 28-09-2021 Accepted: 06-10-2021

ABSTRACT. The purpose of this qualitative research was to determine and analyze the effectiveness of the implementation of the Total Quality Management (TQM) program in Vocational High Schools in Bogor Regency and to determine and analyze the effectiveness of the implementation of Total Quality Management (TQM) on Teaching Factory (TEFA) in Vocational High Schools in the District. Bogor. The research location was conducted at SMK Negeri 01 Bogor Regency and SMKS PGRI Citeureup based on purposive sampling and library research from statistical data at the Bogor Regency Education Office and the Bogor Regency Ministry of Religion as the primary and secondary data objects for analysis. Data collection techniques using interview techniques, observation or observation, and documentation studies with data analysis techniques using data reduction, data presentation, and drawing conclusions or verification. The results of this study are The process of implementing TQM teaching factory in learning at SMK PGRI 01 Cibinong and SMKS PGRI Citeureup refers to the concept of Plan - Do - Check - Action (PDC). The plan (input) includes planning learning tools such as curriculum implementation, syllabus, lesson plans, attendance, teaching materials, media, assessment sheets and worksheets. Do (Process) includes carrying out learning according to planned lesson plans and the teaching factory learning model and block system. Output (Control) includes the implementation of learning evaluation, competency evaluation, teacher performance evaluation and internal audit, and making improvements and adjustments according to the assessment from the industry on an ongoing basis.

Keywords: *Total quality management, Teaching factory,*

https://dx.doi.org/10.32678/tarbawi.v7i02.4847

How to Cite Djuhartono, T., Ariwibowo, P., & Alhamidi, L. A. (2021). Implementation of Total Quality Management (TQM) on Teaching Factory (TEFA) Vocational Middle School in Bogor District. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan, 7*(02), 269-282. doi:10.32678/tarbawi.v7i02.4847.

INTRODUCTION

Digitalization and globalization have beneficial and detrimental impacts in this era of digitalization and globalization (Hermawanto & Anggraini, 2020). The beneficial impact is felt when the opportunity for cooperation with foreign countries is opened to the widest and technology to perform practically and dynamically. On the other hand, another detrimental impact is felt when the Human Resources (HR) owned cannot compete with foreign countries. Thus, in the future, it can increase competitiveness and competitive advantage in all sectors, both natural and monetary sectors, by relying on the capabilities of human resources, technology, and management without compromising the nation's comparative advantage. Thus, weaknesses that exist are corrected with various potentials of the nation.

Improving the quality of Indonesian human resources lies in the upstream quality, namely education. The weakening of the quality of human resources in Indonesia is due to the lack of clarity in academic and vocational education management (Gerhana *et al.,* 2019; Noor & Juhji, 2020). HR competition with other nations in fighting for jobs can be resolved if there is improvement in the education sector. In addition, education empowerment efforts need to be improved so that education can empower the wider community. Community empowerment by the education system has a comparative and competitive advantage in the context of international competition.

The quality of graduates is the same as the goal of national education is to develop capabilities, shape the character of a dignified nation's civilization in order to educate the life of the nation, aims to develop the nation's potential of students to become human beings who believe and fear God Almighty, noble, healthy, knowledgeable, capable, creative, and independent, as well as being democratic and responsible citizens (Ulfah *et al*., 2020). Quality is conformance to market or consumer needs. In a general sense, quality implies the level of excellence of a product or work, either in goods or services. In the context of education, the notion of quality refers to input, process, output, and impact (Ulfah *et al*., 2020).

An interesting phenomenon that needs to be observed from graduates of Vocational High Schools (SMK) is the inability of graduates to adapt to the modern industrial world's needs quickly. It resulted in the unemployment rate of SMK graduates, which from time to time continued to increase; on the contrary, many foreign workers came to Indonesia to enter the labour market in Indonesia. The leading cause of this problem is the perception gap between SMK managers in producing graduates and industry managers to use SMK graduates in Indonesia. However, following the mandate of Presidential Instruction Number 9 of 2016 concerning the revitalization of vocational high schools, several improvements have been seen in line with the increase in the work participation rate of SMK graduates so that the open unemployment rate is decreasing.

It is in line with the research results conducted by Taskov and Mitreva (2015) that in the context of education, TQM changes the pattern of relationships by providing a clear customer focus. This focus has no impact on the structure of authority within the school or university. It does not diminish the role of senior leadership. Leadership is essential for the success of TQM because educational institutions must implement several learning models for students so that they can achieve maximum success. For this reason, it is time for SMK to implement TQM (Total Quality Management) in the education system, especially in SMK (educational system), which is often referred to as Total Quality Management in Education (TQME). For the implementation of TQME in Vocational Schools to run well, a sense of understanding and shared responsibility is required to prioritize efficiency and improve the quality of the educational process in Vocational Schools. Applying TQME in education in SMK consistently and continuously can win the competitive global competition and benefit from both economic and non-economic aspects. These benefits can be used to develop Vocational High Schools in improving the welfare of teachers and education personnel.

There are still many teaching methods used by teachers in various vocational schools that do not adapt to the needs of ready-to-work human resources. Moreover, not many teachers have experience in business and industry that is constantly changing and growing. Predictions from FP3K estimate that less than 50 per cent of vocational school teachers in Indonesia understand the needs of the world of work and industry. This fact can be seen from the various pieces of training carried out by FP3KI, an institution founded by some entrepreneurs who have been motivated to improve teachers' quality and learn in vocational schools since 1997.

Total quality management (TQM) is widely recognised as a management philosophy for improving customer satisfaction and organisational performance. However, there is no consensus

over the critical success factors of TQM, in particular, in education and developing countries (Asif *et al.*, 2013). The Indonesian government is currently not fully capable of providing adequate facilities and costs for vocational schools, thus reducing the quality of vocational school graduates. This philosophy has implications for my management and curriculum lum and learning in SMK. Vocational High Schools must be managed concerning the main goal, which is to prepare graduates ready to enter the world of work and work. SMK management must be designed to achieve both effectiveness and efficiency. Planning and implementing programs as close as possible to workplace conditions is an essential task for SMK. The curriculum must be prepared based on the needs of the world of work (demand-driven). Equipment and machines for practice must be provided with the same criteria, at least approaching the world of work. Learning in vocational schools must be carried out so that graduates are ready to enter the world of work, having the knowledge, skills and attitudes needed in the world of work. Improvements to government programs are implemented to achieve these goals through the Teaching Factory.

Teaching Factory is a learning concept in an authentic atmosphere to bridge the competency gap between industrial needs and school knowledge. Innovative learning technology and effective practice are the concepts of educational methods oriented towards student management in learning so that they are in line with the needs of the industrial world. The gap between schools and the world of the work industry must be minimised through effective Teaching Factory learning. The existing gap is minimised by first examining the components that are closely related to Teaching Factory learning. This study has examined how the Teaching Factory management system has been applied in various vocational schools and the criteria for the Teaching Factory management system in Bogor Regency. The teaching Factory management system in this study is an indicator of the achievement of this research.

METHOD

This type of research is qualitative research. In this study, the sources and research data were informants; the informants (samples) were school principals, vice-principals for curriculum, teachers and students in various vocational high schools in the Bogor Regency area and other related parties. This research data is about the implementation of Total Quality Management (TQM) on Teaching Factory (TEFA) in vocational high schools in Bogor Regency, the quality of education, and the supporting and inhibiting factors in education in vocational high schools in Bogor Regency. The research location and the unit of analysis in this study were determined purposively, which has been implemented at SMK Negeri 01 Bogor Regency and SMKS PGRI Citeureup based on purposive sampling and literature study from statistical data at the Bogor Regency Education Office and the Bogor Regency Ministry of Religion as primary and secondary data objects for analysis. In this study, the researcher acts as a passive participant-observer, namely the researcher only observes the object of research (phenomena or behaviour of informants and respondents) to find out how the implementation of Total Quality Management (TQM) on Teaching Factory (TEFA) in vocational high schools in Bogor Regency, quality of education and supporting and inhibiting factors in education in vocational high schools in Bogor Regency. The researcher collected data by using interviews, observation, and documentation studies. This study's qualitative data analysis method consists of three activity lines that co-occur, namely, data reduction, data presentation, and conclusion drawing or verification.

RESULT AND DISCUSSION

State Vocational High School PGRI 01 Cibinong

The resource persons who were interviewed intensively with names using codes were WKR (Vice Principal for Curriculum), WBN (Vice Principal for Community Relations) and Principal (KS). To strengthen the substance of the data from the results of interviews and observations, the

researchers searched for existing archival documents related to learning. SMK Negeri PGRI 01 Cibinong has been experienced in implementing the teaching factory system since 2015 and always updates or updates to the latest version 2015 in 2017/2018 following the vision and mission of SMK Negeri PGRI 01 Cibinong in organizing an integrated education system with the world of industry and business and education services. The Principal said that:
"…we have been using the teaching-factory since 2015, which has developed in the form of MoUs with companies, in the form of internships (apprenticeships) to recruitment so that graduates from this school are not like high school graduates who are looking for data, not continuing their education. go to university level, but go straight to work or create jobs…" (Head of SMKN PGRI 01 Cibinong, 2021).

In addition, the Deputy Principal of the Fostered Relations School stated: *"…Besides in the form of partnerships, the implementation of TEFA at SMKN PGRI 01 Cibinong is formed in the Special Job Exchange (BKK) such as in bakery companies, tire factories, and other home industries…"* (Vice Head School of Relationship Development at SMKN PGRI 01 Cibinong, 2021). Furthermore, submission of a statement in the scope of learning that has implemented a teaching-factory quality management system in learning was delivered by the Deputy Principal of the School Curriculum who said: *"At TEFA, we started implementing the teaching factory in 2015 until now, 2017 is the year 2017/2018 starting the implementation of the teaching factory The latest version of TQM in 2015"* (Vice Principal Curriculum at SMK PGRI 01 Cibinong, 2021).

Based on the data above, it can be concluded that within the scope of education based on customer requirements and laws and regulations, SMK Negeri PGRI 01 Cibinong seeks to provide optimal services by adjusting to the needs of related parties or interested parties through the implementation of the teaching-factory quality assurance system that has been implemented since 2015 until now to maintain the quality of schools. It is because especially in maintaining the quality of learning in SMK Negeri PGRI 01 Cibinong. Therefore, planning in learning is also related to improving the quality of resources, especially human resources, namely educators, so that learning objectives can be achieved. In line with this, Suroso (2017) states that many vocational teachers are lagging in updating their skills to suit the times; as a result, much education in vocational schools is carried out under national education standards, which results in graduates not having adequate competence.

State Vocational High School PGRI 01 Cibinong has identified and understood the needs of related parties, namely as schools that produce graduates who are ready to work according to the competencies needed by industry through a curriculum synchronization program based on Presidential Instruction. Using the teaching factory learning model in the implementation of learning is one element in meeting customer satisfaction. It is supported by Sallis (2012) statement that the primary mission of implementing integrated quality management of an institution is to meet the needs and desires of customers. According to the Principal of SMKN PGRI 01 Cibinong (2021), *"In practice, during learning, the implementation is alternated one week between productive and adaptive normative lessons. The pattern of the learning schedule was adapted in accordance with Presidential Instruction No. 9 of 2016 uses a weekly block system model whose implementation is carried out with one week block of compulsory group A and compulsory group B, and one week block of compulsory group C (specialization)."*

In terms of learning planning at SMKN PGRI 01 Cibinong, following the educational process standards initiated by the government, including syllabus, lesson plans, learning resources, job sheets, student assessment forms, and media aligned with the teaching factory learning model. In the context of learning planning, planning must be prepared through considerations that align with the quality standards that have been set. It agrees with Haryani (2018) which explains that planning must be systematic to be implemented through student activities to achieve a learning goal and can change according to needs and pay attention to efficiency aspects. Mentioned by the Deputy Head of Development Relations and Public Relations of SMKN PGRI 01 Cibinong (2021), said, *"At least 80% of educators have a master's academic qualification; At least 90% of teachers have educator certificates, and at least 85% of productive teachers have competency certificates from professional*

certification institutions" . This is supported by the documentation of Presidential Instruction No. 9 of 2016 stating that: "five areas of revitalization consisting of curriculum, teachers and education personnel, collaboration with the Business/Industry World, certification and accreditation, as well as infrastructure and institutions." The Deputy Head of Fostered Relations and Public Relations of SMKN PGRI 01 Cibinong (2021) also added, *"...which means, in supporting the quality of learning, it is necessary to support quality resources, one of which is in terms of human resources (educators) who have certified qualifications…".*

Based on these observations, it can be concluded that SMKN PGRI 01 Cibinong conducts training and facilitates educators to improve competence to support a quality learning plan. In line with this statement, Mawardi (2018) argues that: *"...to improve teacher competence by providing professional assistance in the form of refreshment, consultation, guidance, and activities related to improving the quality of other competencies".* In operation or implementation of learning at SMKN PGRI, 01 Cibinong carried out following the procedures and rules that have been planned, namely through the use of a block system schedule and teaching factory learning model that is compiled in the lesson plan or lesson plan. Learning documents prepared when the teacher wants to carry out learning are lesson plans, attendance, list of grades, learning agenda and job sheets. In addition, during learning activities, the teacher will record learning activities every day on employee performance targets, the principal's assessment document on teacher performance. Thus, it is in line with Ulfi's *et al* (2012) statement, "learning documents that must be prepared when teachers carry out productive learning are lesson plans, job sheets, attendance, list of values, and learning agenda".

In achieving the satisfaction of students who graduated from SMKN PGRI 01 Cibinong, they evaluated students' competence in the form of internships and verification. SMKN PGRI 01 Cibinong conducts competency verification by bringing in industry parties who have collaborated with expertise programs to test students' competencies directly. In carrying out assessments in schools, teachers assess students on each completed basic competency and assessments that have been scheduled by the school, such as mid-semester and end-semester assessments. This assessment measures students' level of achievement in the learning process after they take part in classroom learning. The assessment as a benchmark uses the school's KKM, and the expertise competencies are directly brought to the industry for assessment. In line with the Minister of Education and Culture, according to Azis *et al.* (2017) who said that the evaluation of learning is a decision-making material regarding the development of student learning in the learning process, which can later be used as a reference to provide enrichment or remedial to students, and can be used as a reference for planning the next lesson.

In assessing the quality of learning, it is not enough if it is only seen from the results of student assessments. However, it must also look at teachers' performance as educators through employee performance targets (SKP) according to the opinion of Harun *et al* (2017) in improving teacher competence carried out at the end of each semester through teacher performance assessments described in the SKP. In addition, TEFA has an outcomes component that includes four aspects, namely the results of the UN, the results of the UN Productive Component, the absorption of graduates in the world of work, and the waiting time for graduates to be absorbed in the world of work, and six sub-aspects, namely: at least 50% of students get a score Math UN 55.0; at least 50% of students get an English UN score 55.0; at least 50% of students get the Indonesian National Examination to score 55.0; at least 90% of graduates get the UN Productive Component score 70, and certified, the absorption of graduates in the world of work is 80%, and at least 50% of graduates have a waiting time of < 2 months (Alhamidi *et al.,* 2020).

PGRI Citeureup Vocational High School

SMKS PGRI Citeureup has not been implemented optimally in implementing the teaching factory system. It was only implemented in 2018 to organize an education system integrated with the industrial world, business world, and education services. The Principal of SMKS PGRI Citeureup (2021) said:

"…we have been using the teaching factory since 2018 and have developed with SMKS, we have an MoU of partnership with companies, in the form of internships (apprenticeships) to recruitment. …but the Tefa teh program has not been implemented and implemented to its full potential, this is because we are still in the middle of improving school management…" (Principal of SMKS PGRI Citeureup, 2021).

The results of the interview with the Deputy Principal of the SMKS PGRI Citeureup Curriculum (2021) added:
"...we actually have implemented a teaching factory but it has not been maximized, so our curriculum continues to synchronize the curriculum, in synchronizing the learning curriculum we have collaborated with various industries in the form of Prakerin (Industrial Pre-Employment), so that students who have graduated, can immediately work in companies that have collaborated, even though there are not many in each batch, especially during the Covid-19 pandemic like this, sir…". It is reinforced by a statement from one of the teachers of SMKS PGRI Citeureup (2021), that: *"... aa', in the pre-teaching period (recruitment), we as a tea teacher who will conduct classroom teaching, are expected to have a dajdar quality that is in accordance with the qualifications of the curriculum and subjects to be taught which have been agreed upon by the school and industry, aa'...".*

In the organizational context, PGRI Citeureup Vocational School has carried out its function as a vacation school. However, this function is optimal because the quality targets that have been set have not been fully achieved even though the school has understood the needs of related parties, such as producing graduates who are ready to work. In addition, students can also work according to the competencies required by the industry through a curriculum synchronization program based on Presidential Instruction Number 9 of 2016 concerning Vocational Revitalization.

The analysis at the planning stage is based on indicators adapted to the scope of the world of education. For example, the teacher of SMKS PGRI Citeureup said: "*RPP, Presence, personal agenda or book of teaching notes/KBM is an important thing in starting Teaching Factory to teaching participants* ..." in line with this in the documentation of the quality objectives of SMKS PGRI Citeureup states "At least 97% of teachers develop learning tools (syllabus, lesson plans, job sheets) based on factory teaching, in accordance with national and international industry standards" (DOK. Quality targets). Furthermore, mentioned in the standard of the education process states that: "Learning planning includes the preparation of learning implementation plans and preparation of learning media and resources, learning assessment tools, and learning scenarios. The preparation of the syllabus and lesson plans is adjusted to the learning approach used " (Permendikbud No.22 of 2016). The headmaster also added, *"...the teacher staff at SMKS PGRI Citeureup are given training and seminars are required to attend and then they are allowed to teach..."*

Based on the data above, it can be concluded that the learning planning at SMKS PGRI Citeureup is following the standards of the educational process initiated by the government, including the syllabus, lesson plans, learning resources, job sheets, student assessment forms and media that are aligned with the teaching factory learning model. In the context of learning planning, planning must be prepared through considerations that align with the quality standards that have been set. The analysis at the operation stage in this study is based on indicators adjusted to the education world's scope. The analysis of the operation stage on the implementation of Teaching Factory (TEFA) in learning at SMKS PGRI Citeureup are:

Operation is the stage of implementing a plan that has been made according to the objectives to be achieved. Deputy Principal of the SMKS PGRI Citeureup Curriculum (2021) stated: *"…at SMKS PGRI Citeureup, has established cooperation with various industry parties specifically for grade 12, so that grade 12 students conduct industrial internships in various industries that have collaborated, while for grades 10 and 11, only participate in theoretical and practical learning activities in class…".* This statement was reinforced by the Principal of SMKS PGRI Citeureup (2021), who stated: *"...the teaching factory model learning system is output-based, so the teaching curriculum produces one product for grade 12, while grades 10 and 11 have not 100% implemented teaching factory in the teaching process...".* In line with

the statement of the principal, Waka Facilities and Infrastructure of SMKS PGRI Citeureup stated: *"...Yes, that's right, it all happened because the facilities and infrastructure to support the teaching factory in our place were limited, because the school management was in the development stage...."* (Deputy for facilities and infrastructure of SMKS PGRI Citeureup, 2021).

Mentioned by the Deputy Head of Guidance Relations and Public Relations of SMKS PGRI Citeureup (2021), said, *"…of the 18 people who teach at our place, thank God, there are 20% of educators who have a master's degree academic qualification, 80% of teachers have educator certificate, and 70% of productive teachers have competency certificates from professional certification bodies"*. This is supported by the documentation of Presidential Instruction No. 9 of 2016 stating that: *"five areas of revitalization consisting of curriculum, teachers and education personnel, collaboration with the Business/Industry World, certification and accreditation, as well as infrastructure and institutions."* Based on these observations, it can be concluded that SMKS PGRI Citeureup conducts training and facilitates educators to improve competence to support a quality learning plan.

Principal of SMKS PGRI Citeureup stated: "The implementation of activities according to the learning schedule and using the block system can improve students' skills. 1 lesson hour 45 minutes/day, an average of 10 lessons" (Principal of SMKS PGRI Citeureup, 2021). The results of researchers' observations support it during the implementation of learning that teachers carry out following the lesson plans or learning scenarios that have been designed. The Deputy Principal of SMKS PGRI Citeureup (2021) infrastructure facilities added, *"...the infrastructure here is limited to support the teaching factory program, such as the number of classes, labs. Computers, labs. English, parking lot, canteen and sports field..."*.

Based on the data above, it can be concluded that the operation or implementation of learning at SMKS PGRI Citeureup has not been carried out 100% following the teaching factory procedures and rules compiled in the learning implementation plan or RPP. The learning documents that the teacher wants to learn are lesson plans, attendance, a list of grades, a learning agenda and job sheets during learning activities. The teacher will record learning activities on employee performance targets every day, which will become the principal's assessment document on teacher performance. It is in line with Ulfi's *et al.* (2012) statement, *"learning documents that must be prepared when teachers carry out productive learning are lesson plans, job sheets, attendance, list of values, and learning agenda"*. All activities are recorded on the learning agenda, which consists of the class agenda and the teacher's agenda. According to Permendikbud No. 9 of 2016 states: *"Teachers create order, discipline, comfort, and safety in carrying out the learning process."*.

In line with Permendikbud No. 9 of 2016, According to Karwati and Priansa, quoted by Khatijah and Bahrun (2017) state that teacher performance is related to the teaching and learning process, namely the ability or skills of teachers in creating an atmosphere of educative communication between teachers and students that includes a cognitive, affective, and psychomotor atmosphere as an effort to learn something based on planning up to the evaluation stage. and follow-up in order to achieve teaching objectives. In terms of evaluation, the Deputy Principal of the Curriculum School of SMK PGRI Citeureup (2021) added, *"...Our teaching model is mostly conventional in delivering material in class, there are also teachers who leave their students to study alone. in the classroom. For control, we already have a controller from the teacher concerned and the coordinator of the TEFA study program, together with the industry, to help support TEFA's performance at SMKS PGRI Citeureup..."*.

The principal of SMKS PGRI Citeureup said, *"...alhamdulillah at SMKS PGRI Citeureup, every year the graduation rate for the majority of math exam scores (72%) is > 70, the majority of the English exam scores (71%) are > 65, the Indonesian exam scores the majority (83%) is worth > 75…"*. In addition, TQM has an outcomes component in the performance assessment in Vocational Schools which includes four aspects, namely the results of the National Examination, the results of the UN Productive Components, the absorption of graduates in the world of work, and the waiting time

for graduates to be absorbed in the world of work, and six sub-aspects, namely: 50% of students got the Mathematics National Examination score 55.0; at least 50% of students get an English UN score 55.0; at least 50% of students get the Indonesian National Examination score 55.0; at least 90% of graduates get the UN Productive Component score 70, and certified, the absorption of graduates in the world of work is 80%, and at least 50% of graduates have a waiting time of < 2 months (Alhamidi *et al.,* 2020).

From the data above, it can be concluded that in achieving the satisfaction of students who graduated from SMKS PGRI, Citeureup held a competency evaluation of students in the form of internships and limited verification. SMKS PGRI Citeureup conducts competency verification by bringing in industry parties who have collaborated with expertise programs to test students' competencies directly. At the stage of implementing the assessment, the teacher assesses students on each completed basic competency. The assessment is carried out according to the scheduled time, such as mid-semester and end-semester assessments aimed at measuring student achievement in learning based on the KKM that the school has set. In line with the Minister of Education and Culture, according to Azis *et al.* (2017) who said that the evaluation of learning is a decision-making material regarding the development of student learning in the learning process, which can later be used as a reference to provide enrichment or remedial to students, and can be used as a reference for compiling further lesson planning.

Discussion

The planning stage begins with problem identification using 5W techniques, namely What, Who, When, Where, and Why, with root cause analysis techniques. According to Pyzdek and Keller (2013), things that must be done when carrying out a plan include: Establish the objectives and goals of the task to be improved or developed, Describe the task in detail with precise specifications, Develop a team that will be a part of the PDCA and set the deadlines, Note down the data to be used, resources that will be needed, a cost expected, risks and mitigating steps, human resources required, support needed from management, Draw an implementation plan with a breakdown of each task, owner, expected outcome, operating procedure or guidelines.

Based on the data analysis above and the results of interviews, documentation and observations made by researchers, it can be concluded that the implementation of Teaching Factory (TEFA) in learning at SMKN PGRI 01 Cibinong and PGRI Citeureup Vocational High School is planned concerning quality policies and learning quality targets including curriculum synchronization, preparation of learning tools (Syllabus). Lesson plans, teaching materials, job sheets, attendance lists and assessment forms.

State Vocational High School of PGRI 01 Cibinong

Input Stage (Planning)

SMK PGRI 01 Cibinong has carried out various preparatory activities in the application of TEFA to support the quality (TQM) of teaching, in the form of Socialization, carried out to all teachers, employees, and students of SMK Negeri PGRI 01 Cibinong, Establishment of SMK Negeri PGRI 01 Cibinong. Implementing team for teaching factory at SMK Negeri PGRI 01 Cibinong, Preparation of plans and scope of teaching factory activities at SMK Negeri PGRI 01 Cibinong, Preparation and validation of learning device documents, including the main components of the teaching factory consisting of products, schedule blocks, and worksheets. In addition, the teaching factory input at SMKN PGRI 01 Cibinong is the first school to do it. Therefore, first, introduce prospective students to various teaching factory activities so as not to be surprised. Second is the psychological test, so students who are accepted as SMKN PGRI 01 Cibinong must pass the psychological test.

According to Thomas Pyzdek & Paul Keller (2013), at the preparation stage, it is necessary to set goals and objectives for the task to be improved or developed. SMK PGRI 01 Cibinong, in organizing TEFA TQM in our SMK, we have prepared a plan to conduct Teaching Factory-based vocational learning that is environmentally cultured, innovative, creative and competitive. A detailed job description has been carried out by SMK PGRI Negeri 01 Cibinong by synchronizing learning curricula that involve the industrial world in the form of a Special Labor Exchange so that when companies need workers to work, they can visit SMK Negeri PGRI 01 Cibinong. In addition, a teacher who will teach in the classroom must have quality curriculum skills according to his qualifications.

Regarding Developing a team that will be part of PDCA and setting deadlines, the school has designed various learning tools as guidelines, benchmarks, professional improvement and facilitate the delivery of materials, including academic calendars; study time allocation; annual program; semester program; Syllabus; RPP; the daily journal of teaching and assessment. In addition, learning planning also pays attention to changes in planning to overcome discrepancies in the planning of learning devices through outreach to teachers in charge of each subject who are directly responsible to the principal and deputy principal in the field of the curriculum so that they can design learning tools that are following the curriculum quality document.

The planning stages, which include recording the data to be used, the resources needed, the estimated costs, risks and mitigation actions, the human resources needed, and the support needed from the management, have been well prepared by SMKN PGRI 01 Cibinong. The plan is contained in the lesson plans, attendance, personal agenda or teaching notes. In line with this, 97% of SMKN PGRI 01 Cibinong develop learning tools (syllabus, lesson plans, job sheets) based on the teaching industry and follow national and international industry standards. Thus, SMKN PGRI 01 Cibinong follows the regulation of the Minister of Education and Culture Number 22 of 2016. In addition, schools conduct assessments and training on TEFA for teachers and school staff who do not have TEFA experience.

Process Stages

The process is the next stage in the Teaching Factory (TEFA), including the input (planning), process, and output (results) stages. The implementation of learning at SMKN PGRI 01 Cibinong applies according to learning planning and adapts the block system and teaching factory learning model following the vision, mission and objectives of learning quality to adapt to the industry. It follows Presidential Instruction Number 9 of 2016, which states: "...block system learning is also suitable for factory-based learning, because this block system can simplify and speed up the production process of partner industries.". In the implementation of learning is the implementation of article 8 concerning operations, the implementation of learning in the standard educational process is the implementation of RPP, including preliminary, core and closing activities (Permendikbud No 22 of 2016) teachers carry out learning following learning plans that have been prepared with procedures and rules that have been set (Prastyawan, 2017). The teacher refers to the learning document and records all the activities carried out during the learning process. Recording or recording on the activity agenda is carried out to deliver the material presented in stages and according to essential competencies.

According to Pyzdek and Keller (2013), the stages of implementation include following the implementation plan, performing all tasks, informing stakeholders about progress, adhering to the schedule and highlighting problems and significant variations noted. At SMK PGRI 01 Cibinong for grade 12, it is mandatory to carry out Special Work Unit (UKK) in the teaching process that follows the LSP competency assessment/test directly from the industry. In contrast, for grades 10 and 11, the form of TEFA performance assessment is based on the block system in KBM so that all students can produce output following the industry's desires that have been targeted regarding the dateline and something of quality produced. The teaching-factory model learning system is

product-based, so the teaching curriculum is a package that must produce one finished product, not delayed if the learning model is a regular class, then meet next week and then meet again next week, if not for SMK, a learning package that this one has to be finished and one product has to be delivered, but still there is one man one tool. During this process, SMKN PGRI 01 Cibinong uses a teaching factory schedule, and learning uses a teaching factory schedule method called TEFA so basically a teaching factory until each class has an index of 2-3 in which all subjects are assigned teachers are responsible for a vice principal for the curriculum". Then the school is very supportive of implementing TQM TEFA; 80% of educators have a master's degree academic qualification, 90% of teachers have educator certificates, 85% of productive teachers have competency certificates from professional certification institutions. It is supported by Presidential Instruction No. 9/2016, which states that: "five areas of revitalization consisting of curriculum, teachers and education staff, collaboration with the Business/Industry World, certification and accreditation, as well as infrastructure and institutions ".

The implementation of activities according to the learning schedule and using the block system can improve students' skills. For example, 1 lesson hour is 45-50 minutes a day, an average of 10-11 hours of lessons. The process of learning activities begins with praying and checking the attendance of students. After that, the teacher explained the teaching material for 10 minutes. Then, for 35-40 minutes, students are given assignments and carry out their respective tasks. The learning method used is not out of the TEFA curriculum that applies at SMK PGRI 01 Cibinong. Based on the results of observations, the implementation of learning carried out by teachers follows the lesson plans or learning scenarios that have been designed. In addition, the facilities and infrastructure at SMKN PGRI 01 Cibinong are complete enough to support the teaching factory program, such as having a laboratory. Computers, digital laboratories, laboratories. Language English, student council room, and extracurricular room.

Act

According to Pyzdek and Keller (2013), various actions must be taken when an evaluation has been carried out as a material for future planning, namely: Correct the defects and make it comply with the specifications, Identify the preventive actions for all the root causes identified, Implement the preventive actions and check whether the outcome is as expected, repeat the steps Do-Check-Act until all of the objectives are met to the satisfaction of the stakeholders. Based on the various evaluation activities that have been carried out, it can be seen together that in achieving the best TQM TEFA) performance, SMKN PGRI 01 Cibinong conducts an evaluation of student competencies in the form of internships and verification of SMKN PGRI 01 Cibinong conducts competency verification by bringing in industry parties who have done work the same as the expertise program to test the competence of students directly. The teacher assesses students on each completed basic competency. Assessment is carried out according to the schedule set by the school, as well as verification competency skills that bring the industry directly to assess. In line with the Minister of Education and Culture, according to Azis et al. (2017) who said that the evaluation of learning is a decision-making material regarding the development of student learning in the learning process, which can later be used as a reference to provide enrichment or remedial to students, and can be used as a reference for planning the next lesson. In assessing the quality of learning, it is not enough if it is only seen from the results of student assessments. However, it must also look at teachers' performance as educators through employee performance targets (SKP) according to the opinion of Harun *et al.* (2017) in improving teacher competence carried out at the end of each semester through teacher performance assessments described in the SKP. So that the school continues to carry out various plan-do-check-action activities following the development of the world of education, especially TQM-TEFA dynamically. Based on this, we can all know that in achieving the best satisfaction, SMKN PGRI 01 Cibinong conducts student competency evaluations in the form of internships and verification. SMKN PGRI 01 Cibinong

conducts competency verification by bringing in industry parties who have collaborated with expertise programs to test students' competencies directly.

Vocational High School of PGRI Citeureup

According to Thomas Pyzdek & Paul Keller (2013) regarding Plan – Do – Check – Action or PDAC. There are not many activities carried out by the PGRI Citereup Private Vocational School compared to the PGRI 01 Cibinong Vocational School in the TQM TEFA transformation, starting from the input, process, output and evaluation stages, and evaluation implementation.

Input Stage (Planning)

Learning planning at SMKS PGRI Citeureup follows the standard of the educational process initiated by the government, including syllabus, lesson plans, learning resources, job sheets, student assessment forms, and media aligned with the teaching factory learning model. In the context of learning planning, planning must be prepared through considerations that align with the quality standards that have been set. Then the planning of the teaching factory has not been 100% carried out, and this is because the qualifications of the teaching staff are still below 30% according to the standard so that they are not yet mature. In addition, limited infrastructure facilities to support the teaching factory program, such as the number of classes, labs. Computers, labs. English, parking lot, canteen, and sports field. It agrees with Haryani (2018) which explains that planning must be systematic to be implemented through student activities to achieve a learning goal and can change according to needs and pay attention to efficiency aspects. So Based on the data above, it can be concluded that the operation or implementation of learning at SMKS PGRI Citeureup has not been carried out 100% following the teaching factory procedures and rules compiled in the learning implementation plan or RPP.

Process Stages

The implementation of this teaching factory has been adapted to the 2013 curriculum. *Teaching factory* is a learning pattern perceived by teachers following the 2013 curriculum, which emphasizes the development of learning that involves student activities. The teaching factory carries the concept of learning that can bridge the gap between student competition and industrial needs through an adjustment to the industrial world, and students are required to be more innovative in production practices. However, according to the results of interviews and field observations, implementing the teaching factory at SMK PGRI Citeureup is carried out following procedures and work standards in producing goods and services. The output produced by students with the application of the teaching factory is supervised directly by the teacher so that the quality of the output produced follows industry standards. In addition to being adapted to the 2013 curriculum, the teaching factory learning pattern is also structured in a structured manner using a syllabus reference for the development of lesson plans. The preparation of the lesson plans used in developing the teaching factory learning pattern at SMKS PGRI Citeureup is adjusted to the RPP standards set by the government. All learning materials in the furniture engineering expertise program use the teaching factory learning concept, both normative, adaptive, and productive.

Teaching factory with the development of a grand design at SMKS PGRI Citeureup is a learning model in vocational education institutions that uses products with learning media to prove student competence and student skills. SMKS PGRI Citeureup has used the products produced by students in the workshop as a benchmark for their ability in the industrial world. Thus, the application of this teaching factory does not only show students' ability to master the material in learning activities in class. The teacher of SMKS PGRI Citeureup explained that using this teaching factory learning pattern could improve the alignment of the delivery process for skill development in the furniture workshop. It is not enough to only improve the quality of student's skills; the teacher also explains that with this teaching factory learning pattern, students' academic

abilities are also more focused, so that there is a balance between the skills possessed by students and mastery of the material. The teaching factory learning pattern applied at SMKS PGRI Citeureup also inserts normative, adaptive, and productive values that emphasize student activities. It is undoubtedly in line with the mandate of the 2013 curriculum, which requires students to be more active in learning the whole series of teaching factory concepts. SMKS PGRI Citeureup directs its students to understand standards or quality actively, solve a problem, and create innovations in the products it produces. Thus, students are expected to be able to measure their respective abilities. The ability to understand each other is needed by students so that later when they enter the world of work, they can position themselves according to their abilities and skills, hoping that this will reduce mistakes made in the world of work.

The role of the teacher here is only as a companion, director, and role model for students, although the teaching factory program has not been implemented optimally by SMKS PGRI Citeureup until now. In addition, the vocational education program at SMKS PGRI Citeureup has been able to prepare graduates who are ready to work in workgroups. Graduates of the Office Automation and Governance (MP) & Online Business and Marketing (BP) Skills program at SMKS PGRI Citeureup continue to work in industry and as new entrepreneurs or continue their studies. The jobs they receive are following what they choose, and this shows that SMKS PGRI Citeureup equips graduates with sufficient knowledge, skills, and experience to accept jobs according to their majors. Graduates of SMKS PGRI Citeureup quickly enter the job market, or it can be interpreted that graduates of SMKS PGRI Citeureup can create their jobs. The ability to create their jobs will be very beneficial for economic growth and development. This fact is a sign that the teaching factory's educational orientation follows the foundation of vocational education. Students of the teaching factory vocational program are expected to develop with the application of the teaching factory as a learning pattern in the classroom. The impact of implementing this teaching factory is that students' skills in the classroom/laboratory and the ability to master the material obtained during the learning process are balanced.

However, TQM-TEFA does not run optimally due to infrastructure (laboratory, sports fields, audiences for Industrial-Vocational Schools) and the number of subject teachers and the number of teachers and officials with education above Bachelor's degree is minimal and at least school officials and teachers. Moreover, teachers who already have available positions (teacher certification) are still low at SMK PGRI Citereup, so it needs to be communicated in a balanced way so as not to cause errors in implementing TQM - TEFA at SMKS PGRI Citeureup. TQM has already arrived in higher education in dozens of institutions, notably research universities and community colleges. These institutions offer success stories of improved communication, higher employee morale, increased productivity, improved process efficiency, and reductions in defects and costs. Through communication and sharing of ideas, more educational institutions will implement similar programs that produce stories of success. In this paper, we have suggested a five-step process for implementing TQM in educational institutions. We feel that these steps can be used as a framework for implementing quality improvements within educational institutions (Motwani & Kumar, 1997).

Act

In achieving the satisfaction of students who graduated from SMKS PGRI Citeureup, they evaluated students' competence in the form of internships and limited verification. SMKS PGRI Citeureup conducts competency verification by bringing in industry parties who have collaborated with expertise programs to test students' competencies directly. In line with the Minister of Education and Culture, according to Azis *et al.* (2017) who said that the evaluation of learning is a decision-making material regarding the development of student learning in the learning process, which can later be used as a reference to provide enrichment or remedial to students, and can be used as a reference for compiling further lesson planning. In assessing the quality of learning, it is not enough if it is only seen from the results of student assessments. However, it must also look at

teachers' performance as educators through employee performance targets (SKP) according to the opinion of Harun *et al.* (2017) in improving teacher competence carried out at the end of each semester through teacher performance assessments described in the SKP.

CONCLUSION

The process of implementing TQM teaching factory in learning at SMKN PGRI 01 Cibinong and SMKS PGRI Citeureup refers to the concept of Plan – Do – Check – Action or PDAC (Pyzdek and Keller, 2013). Plan (Input) includes planning learning tools such as curriculum implementation, syllabus, lesson plans, attendance, teaching materials, media, assessment sheets and job sheets. Do (Process) includes carrying out learning according to planned lesson plans and the teaching factory learning model and block system. Finally, output (Evaluation) includes carrying out learning evaluations, competency evaluations, teacher performance evaluations and internal audits and making improvements and adjustments according to assessments from the industry on an ongoing basis. However, there are several obstacles during the learning process in implementing the TQM teaching-factory quality management system, such as the lack of teacher commitment to the adjustment of learning quality document procedures such as the Learning Implementation Plan (RPP) made by the school, and limited learning time.

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