Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
www.bircu-journal.com/index.php/birci
Budapest Institute

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)

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Abstract

The background of this research is based on the Government's policy regarding the revitalization of Vocational High Schools, efforts to increase the competitiveness of graduates, so that the target is achieved in the absorption of Vocational High School graduates in the job market. In the absorption of vocational graduates, there is a gap in the implementation of learning in schools that is not yet connected to the competencies needed by the world of work and industry (DUDI). SMK Negeri 4 plays a role as a Center of Excellence (PK) school and has the obligation to organize learning in certain skill programs using Teaching Factory, referring to the guidelines for organizing SMK-PK. The research objectives are to define; (1) implementation of planning, implementation and evaluation (TEFA). (2) Factors supporting or supporting the implementation of TEFA, (3) Obstacles and solutions for the implementation of TEFA. Research methods, using descriptive research with a mixed method approach, collecting data through qualitative dimensions, namely by in-depth interviews, and survey techniques using questionnaires to TEFA actors at SMKN4 Balikpapan. The results of the interviews were analyzed and mapped to draw conclusions to be processed using Atlas-ti software, then coded for the results to be visualized to be displayed and interpreted in the discussion. Research conclusions (1) The implementation of TEFA uses an integrative thematic project based learning model. (2) The supporting factors for the curriculum aspect, teacher human resources, facilities and infrastructure, support from DUDI partners, and the management of TEFA products show good and very good categories. (3) Obstacles and implementation solutions are identified and resolved through a consensus meeting at SMKN 4 Balikpapan.

Keywords
TEFA implementation; supporting capacity; barriers and solutions

I. Introduction

Vocational High Schools (SMK) as educational institutions that provide skills education to their students have a moral responsibility in delivering their graduates to be absorbed in the world of work. The instrument for delivering graduates is the curriculum that is used as a reference for learning.

The curriculum as a guide to the implementation of education through learning is an important factor in determining the quality of the competency results of each skill. expertise that students follow. The curriculum as the main bridge that connects the education process in SMK with the competency needs in the Business and Industry World (DUDI) is now popularized with the abbreviation of Industry and the World of Work

(IDUKA). This is according to the research report (SMKN 1 Ngasem Kab Kediri, 2019) SMK graduates have difficulty entering the world of work, as a result of the lack of SMK and DUDI.

According to Astuti et al (2019) Education is an obligation of every human being that must be pursued to hold responsibilities and try to produce progress in knowledge and experience for the lives of every individual. Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and Mujahiddin, 2020). Education is expected to be able to answer all the challenges of the times and be able to foster national generations, so that people become reliable and of high quality, with strong characteristics, clear identities and able to deal with current and future problems (Azhar, 2018).

SMK and IDUKA are two institutions with different positions and functions, but have the same interest in realizing the quality of labor competitiveness in Indonesia. Strengthening the competitiveness of the workforce starts from the input of student admissions, quality education processes, by applying competency standards to skills that are in accordance with competency needs at IDUKA.

Vocational High School as the holder of the graduate supply chain that will distribute its graduates to DUDI, of course, ensures that the gap between IDUKA competency standards and the competency standards of skills taught in schools does not widen. The further the gap between the learning process that produces graduate competence, compared to the standard of competency skills required by IDUKA, of course, the more it weakens SMK graduates from being absorbed in the world of work in their field of expertise.

The cooperation between SMK and IDUKA Partners, which connects and shortens the gap, is a strategic choice in realizing a SMK that its alumni are proud of. The collaboration between IDUKA and SMK will connect the competency standards taught in schools with the competency standards needed by IDUKA in absorbing its workforce. Connecting the meeting point between graduate competency standards and IDUKA work competency standards certainly requires project-based integrated learning techniques, according to the criteria for the SMK-PK guidelines.

The gaps in the low absorption of vocational graduates are answered by synchronizing the curriculum in order to further shorten the distance between the meeting point of graduates and the absorption of the world of work. Vocational and IDUKA collaboration can be carried out by organizing a Professional Certification Institute (LSP), of course, after meeting special requirements, LSP organizers in SMK require the availability of certified professional competence, for instructors and competency examiners, in addition to practical facilities and infrastructure that meet LSP standards (MoEC, 2016).

The integration of the SMK curriculum that is connected to the standard skills needed for IDUKA is not the end in solving the complex quality revitalization of SMK which simultaneously requires the resolution of the parties. Implementation of the standard learning process in vocational schools that prioritizes skills aspects requires special models and strategies to ensure the implementation of learning that is able to equip students to be able to adapt during internship program activities, or face competency tests before graduates.

Teaching factory (TEFA) is an industrial-based learning system that utilizes the production unit as a place to run a business or production process. TEFA management is the main point covering planning, organizing, implementing, and evaluating. The developed TEFA is integrated with the production unit for the implementation of student practice (Nurtanto, 2017).

The implementation of TEFA in a vocational school does not run smoothly, for example TEFAat SMK Negeri 4 Semarang out of 7 skills only one is still running, namely mechanical engineering because of the large number of orders. Meanwhile, TEFA at SMK Santo Mikail Surakarta is planned with a long, medium and short term program strategy. Establishment of a PT legal entity to facilitate production activities and implementation of learning design models (Faturrahman, 2016).

Anticipating the failure of TEFA implementation, the planning is prepared and proceeds well, which includes aspects of urgency, clear and measurable goals and objectives, and their success (Habiba, 2020). Referring to the description behind this research, namely overcoming the low absorption of vocational graduates, who work according to their expertise in their field at IDUKA partners at SMK Negeri 4 Balikpapan.

The purpose of this research is to examine the importance of implementing Teaching Factory, from aspects, policies, support capacity, human resources, curriculum, and TEFA product outputs, so as to create a learning process with a fabrication nuance to the success of TEFA learning outcomes. In addition, the purpose of this research is to reveal the obstacles and solutions in the implementation of TEFA.

The importance of this TEFA research is as a contribution to the segment of readers such as teachers and students, who also think about the important role of Vocational Schools in building the quality of learning so that graduates have pride in their success in being facilitated through TEFA learning quality efforts.

II. Review of Literature

Teaching Factory (TEFA) is a learning model that utilizes the infrastructure owned by the school in creating an industrial atmosphere in schools to achieve competence in one or several productive subjects. TEFA in another definition as a learning model based on synergy between SMK and industry is the main key element of success in becoming a means of connecting for collaboration between schools and industry (SMK, yy).

The synergy between SMK and DUDI is to align the competencies achieved by students to match the demands of the industry developed in schools. There are 3 elements of TEFA 1) students who act as workers, 2) teachers who act as assessors, consultants, facilitators and at the same time as the person in charge of the entire learning program, and 3) the giver/owner of orders either from industry, from individuals or from the school itself (Martawijaya, 2015).

Teaching Factory (TEFA) as one of the learning models commonly implemented in SMK Negeri 4 Balikpapan. The basis for selecting this model is based on the TEFA Entrepreneurship model, it turns out that it is valid to be used as a learning model for entrepreneurship in SMK (Muhamad, 2018). TEFA's goal for mimprove work readiness, by aligning competencies and building the working character of vocational graduates according to the demands of the business and industry world (DUDI) through a product/service-based learning process (SMK, yy).

TEFA has principles, among others; “(1) Learning tools are designed based on products/services according to the needs of the community. (2) Students are fully involved directly in production-based learning, student competence is built through personal experience in; create, work on completing products/services based on standards. (3) learning tools are designed with the manufacture of products” (SMK, yy).

In order to fulfill the principles of TEFA organizers as a learning model that ensures that it can be used as a reference for implementation in vocational schools, TEFA is designed by making implementation guidelines, both practical procedures, teacher HR

criteria, equipment and raw materials for production practices to be the focus of managers in schools for users.

The design of TEFA in a vocational school is expected to be implemented in school, from the application of concepts designed with good and measurable learning management patterns, it is hoped thatcan improve the quality of absorption of graduates to work in industries according to their fields of expertise. With this success, it can reduce student unemployment after graduation.

The mindset mentioned above is in line with the efforts of SMK PGRI Mejayan Kediri, by using the TEFA learning pattern, prospective alumni students are expected to become entrepreneurs independently, with high confidencecan open their own jobs and be able to adapt in a business environment that is highly competitive.

Forming a pattern of student independence is carried out with learning activities that are oriented towards studentssoft skills of students, the soft skills of students can be measured directed towards independence. The concept of learning that develops soft skills is carried out by practicing communication skills, interacting well with people around. Mental training and students' self-confidence are equipped from the beginning of entering Vocational School, developing student responses in carrying out routine practical tasks as training for work in the world of work (Princess, 2019). Mlearning models and strategies as well as the media used by teachers determine project based learning so that students get an optimal experience. Din the literature review found “tithere is no difference in student activity and learning outcomes using the TEFA learning model with PjBL in class XI Multimedia SMKN 1 Janapria".(Oktafia, 2019).

“Government Regulation No. 41 of 2015 is used as a government plan to encourage the growth of the industrial population on a medium and large scale” (Kemenkumham, 2015). The government's decision is the flow of TEFA policy in SMK as a grassroots implementation of RIRIN (2015-2035) as a massive national agenda, to move industry from the bottom line to drive a massive scale economy.

The school profile is characterized by TEFA with the following indicators:

a. “Coding the practice environment with school governance in workshops/workshops according to DUDI workplace standards.
b. Learning to use the DUDI standard goods and or service production activity instrument.
c. Student learning outcomes are in the form of real products or services needed by the general public.
d. Organizing a production management system namely product analysis, process, evaluation, product development and storage”), (Curriculum, yy)

To produce TEFA Vocational High School performance in student input activities in new student admissions (PSB) consider aspects of (1) leadership, (2)effective curriculum alignment, *(3)* new student criteria, (4) the fulfillment of practical facilities and infrastructure (Darmawan, tt). Project work system involving student activityas the recipient of the order, by completing the order of the giver of the order. Implementation of the Project Based Learning learning model students are directly given the task of making a product with a project program. (Oktafia, 2019)

TEFA implemented starting from the planning stage based on implementation analysis entrepreneurial learning, based on 2 indicators, namely: readiness of production units and readiness of infrastructure and facilities management, curriculum support, and management management (Purnamawati, yy)**.** To measure the success of TEFA, the assessment procedure is carried out with the principles of quality, efficiency (time and cost) as well as creativity and innovation (Curriculum, yy).

Implementation of the evaluation by looking at the TEFA planning in accordance with the implementation guidelines. Supervision as part of the evaluation by involving stakeholders. Evaluation of TEFA's work products takes into account the costs incurred while continuing to develop an industrial culture.In collaboration withindustry to expand its partnerships.(Darmawan, tt).The analysis of the implementation of TEFA in Vocational Schools pays attention to the feasibility of equipment and supplies, product marketing, the usefulness of developing an entrepreneurial spirit according to their areas of interest and talent, finding motivation, creativity, and innovation of students.(Makhbubah, 2020) In addition to the above criteria, teacher competencies, partner with DUDI. Products produced by students are of good quality, can compete with similar products, so that students are able to be creative and innovate (Santosa, 2018). Practically, the implementation of TEFA is marked by the arrangement of industrial laboratories, (2) competence achievement, (3) learning to adopt industrial competence. Facilitate production, marketing and business development (Noor, 2018).

Relevant Research Analysis

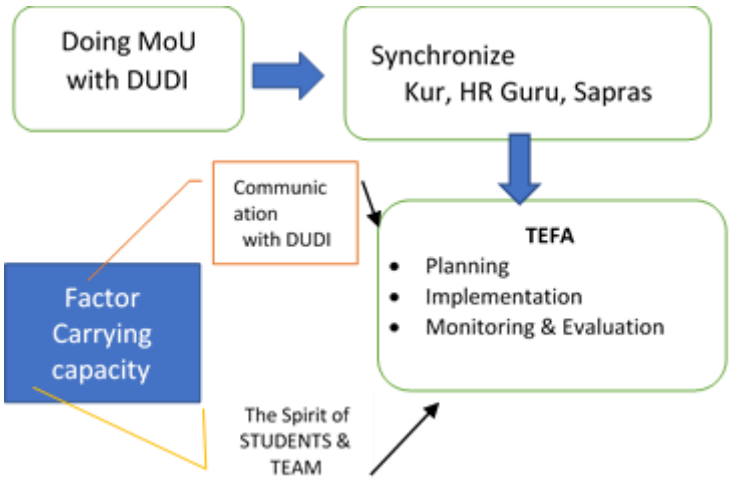


Figure 1. *(Renita, 2020) Result Modified to visual form*

III. Research Method

This research is a descriptive study using a Mix-Method approach, the subject or resource person of the qualitative method is based on the criteria of TEFA expertise such as the Principal (KS-SMK-4), Curriculum Representative (WK-Kur-SMKA), Head of the Catering Program (KA-ProgBoga), the head of the Fashion Design program (KA-ProgBusana), the Catering productive group teacher (GrBg1,2, 3) and the fashion Productive teacher group (GrBS1,2,3). These initials took part in an in-depth interview about the implementation of TEFA from researchers at SMK Negeri 4 Balikpapan.

Determination of sampling to meet the quantitative method of choosing a sample purpose technique, namely a sampling technique that uses certain considerations in taking the sample.(Arikunto, 2000).By setting a quantitative purposive sample, involving productive teachers in the culinary and fashion expertise program. Quantitative data collection techniques by filling out questionnaires. Quantitative data is used as a complement to data which is seen by researchers as still cannot be fulfilled in qualitative research methods. The basis for selecting respondents was based on the number of productive teacher populations as well as a saturated sample.

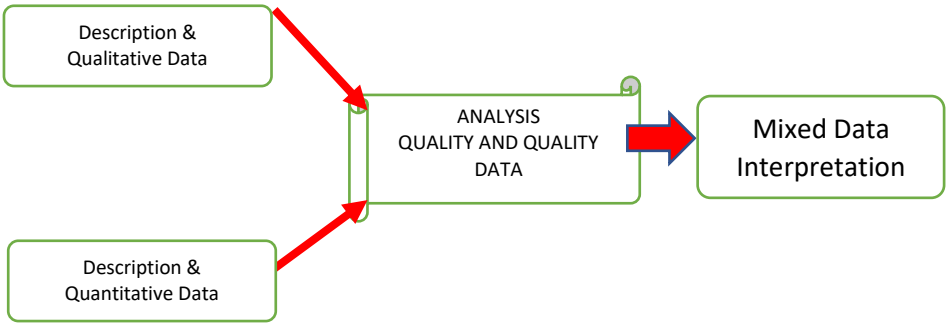


Figure 2. *Mixed Method Design*

To do this research, using the following steps are illustrated as follows;

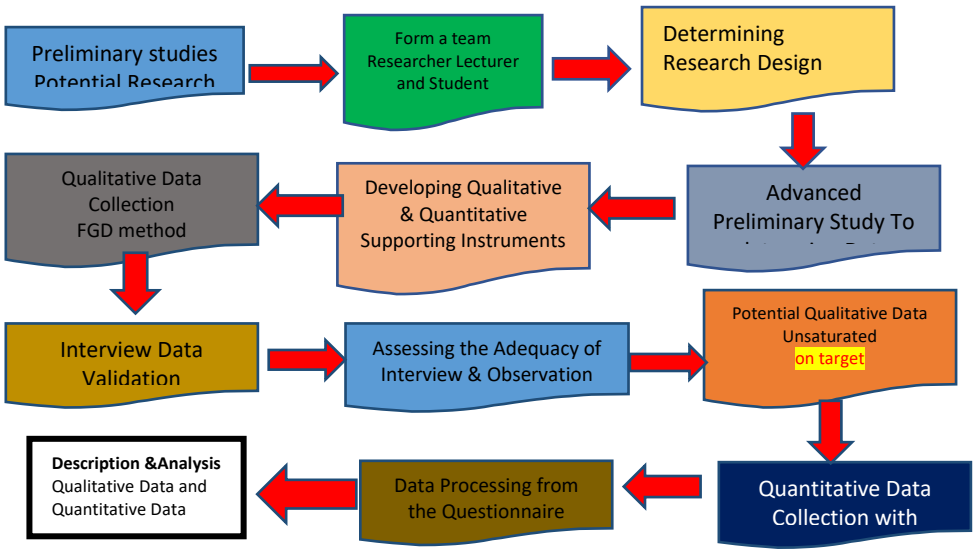


Figure 3. *Mixed Methods Research Flow*

IV. Results and Discussion

4.1 Setting the Policy Base

The policy of SMKN4 Balikpapan is based on the 2018 Directorate General of Vocational Education program, SMK Negeri 4 as one of the TEFA implementers, with the assistance of a team of experts from Riau Province. 1) adequacy of practical facilities and infrastructure, curriculum analysis, productive teacher human resources, number of classes, market considerations, preparation of time frame referring to SKKNI, issuance of SK Implementation of TEFA these findings are supported(Purnamawati, yy),(Makhbubah, 2020). DUDI support plays an important role in the formation of student competencies according to DUDi and SMK competencies. (Kemendikbud, 2016)

Implementation of TEFA socialization as a follow-up stage for the policies produced by SMKN4, to teachers in productive, adaptive and normative groups as well as to their students.

Figure 4. *Socialization of the TEFA SMKN4 Program*

The purpose of the socialization is to provide basic information and improve the readiness of internal school parties to enter the TEFA program in the field of culinary and fashion skills the implementation of TEFA involves the responsible school principal, the coordinator of the Curriculum Waka, the implementer of each head of the fashion and catering expertise program. And the productive teacher team of the two skill programs.The results of this TEFA learning research are in line with the learning approach in accordance with the demands of competence according to their expertise. The trend of TEFA being implemented is increasing in many countries for educational, training and research purposes (Fitrihana, 2018).

DUDI partners are important partners in the implementation of TEFA, because of their important role in standardizing the competencies of students who complete their graduates in this vocational school. TEFA is a project-based learning organization. Project Based Learning, as a collaborative model, innovation and creativity of productive teachers and their students. SMKN4 cooperates with catering companies "Nikmat" and "Diva Bakery" for the Catering expertise program, Fashion design is supported by the A3+ Boutique.

The three DUDIs play an important role in carrying out curriculum alignment to ensure that each student's competency achievement has the competency standards required by DUDI.TEFA in SMK is very important this is according to the views of other research, TEFA will bring school learning closer to the real world in industry, professional practitioners, entrepreneurs and the teaching industry in schools(Dedy Mulyasana et al, 2019)meanwhileAspects of human resources, partnerships, facilities and infrastructure have a very high role in the implementation of the teaching factory.(Saputri, 2017).

The synchronization of the TEFA model curriculum is based on the school's academic guidelines, as a guide for implementing learning both in theory and practice. The curriculum is prepared in a team and uses project based learning. The theoretical basis of learning implementation TEFA uses k. theory*constructivism*, work based learning, production based learning, life skills. Teaching Factory prepared by a team of productive and non-productive teachers is carried out by compiling RPP. RPP application of constructivism learning theory combines several elements, this RPP pattern allows students to increase achievement motives with a tendency to be confident, take responsibility for their actions, take into account risks (Akhmad F, 2015). To develop TEFA, the following figure is presented:

Figure 5. *TEFA development at SMKN4*

For the smooth development of TEFA there must be supportpractical infrastructure which is an important factor in addition to the curriculum, and teacher human resources. The provision of facilities and infrastructure refers to the number of scheduled practice groups, thus activities in the kitchen in the culinary arts and fashion practice rooms use a reference to the number of students designed with group practice. Factors supporting the implementation of TEFA include; (1) Teacher readiness in carrying out the TEFA concept (2) Good DUDI partner relationships as many as 3 DUDI, (3) Integrated curriculum (4) Availability of production facilities and infrastructure (5) Student enthusiasm and TEFA teacher TEAM.

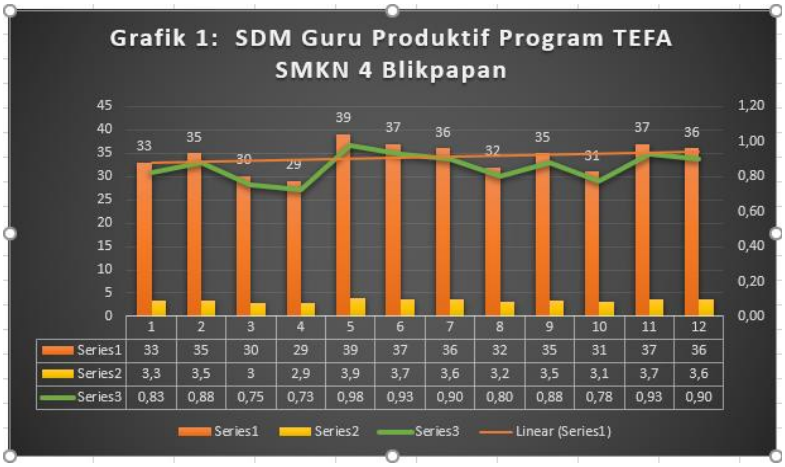
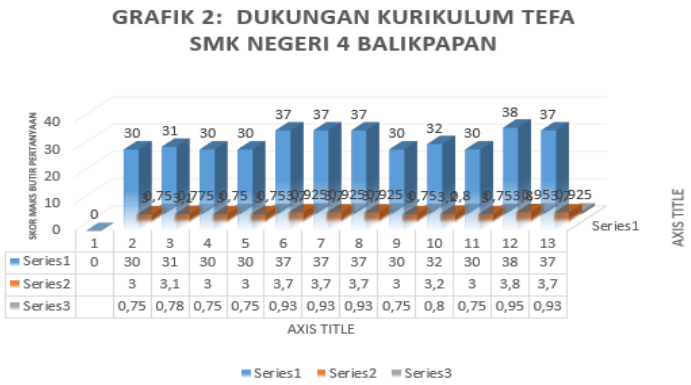


Figure 6. *Productive Teacher Support*

From the graphic data, it is indicated that the question about educational qualifications in accordance with the productive fields being taught gets a maximum score of 4.00 from all respondents. With regard to work experience in the industry, the lowest answer is 2.92, which is the same as the question of being active in training from DUDI. . Meanwhile, the experience of mastering the theory of productive groups in accordance with the field of expertise obtained a score of 3.50 which was in the middle or tau mean score, which means that all productive teachers feel they have competence in the theoretical aspect on average, even though experience from the basics of industry is low and training is also low. This finding illustrates that the intensity of training is very much needed by productive group teachers, to balance out the productivity and creativity of TEFA activities.

The support from the curriculum aspect is illustrated in the following graph;



	1	2	3	4	5	6	7	8	9	10	11	12	13
Series1	0	30	31	30	30	37	37	37	30	32	30	38	37
Series2		3	3,1	3	3	3,7	3,7	3,7	3	3,2	3	3,8	3,7
Series3		0,75	0,78	0,75	0,75	0,93	0,93	0,93	0,75	0,8	0,75	0,95	0,93

Figure 7. *Support for the TEFA SMKN4 curriculum*

From the description above, the curriculum support obtained the highest score of 41 giving the fact that the TEFA model teaches a high work ethic, from the lowest score of 38 TEFA questions to build a work atmosphere in industry, there is the lowest score, this encourages teachers to explore internships for each TEFA production theme. so that the industrial atmosphere. For this reason, school policy is seen as important in the internship program at DUDI. While the middle score obtained is 41 questions, each Tefa applies industry standards, productive teachers explain the TEFA model is able to grow teacher confidence, and teachers have the responsibility to encourage students to produce new products. These three questions have the highest scores, it is concluded that the average teacher is able to carry out the TEFA learning program well so that broad and deep experience is obtained by productive group teachers. The implementation of TEFA pays attention to the completeness, suitability of the curriculum, the readiness of educators and students to be fulfilled. .Learning with an entrepreneurship-based teaching industry model as a forum for achieving cognitive, psychomotor and work attitudes in accordance with relevant industry work competency standards.(Sutianah, 2012)

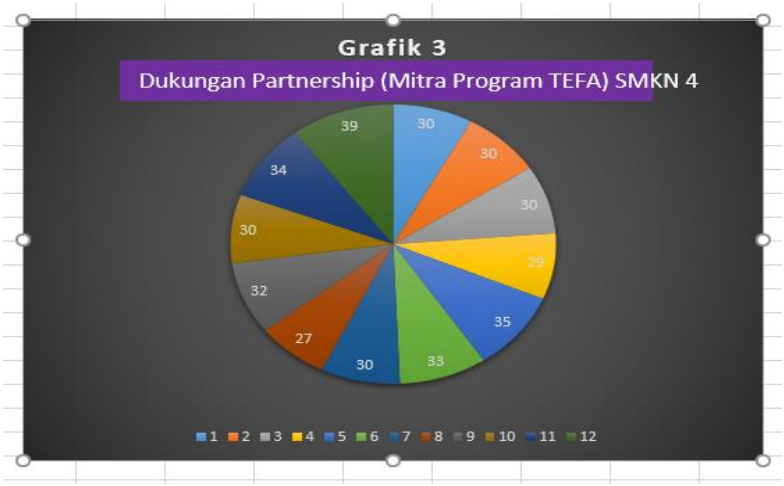


Figure 8. *Support data for TEFA SMKN4 Partnerhsip*

From the analysis of the image shows the lowest score is 35 of the questions weighing 60-70% of practical activities and the rest is theory, the teacher's assessment of this question has not described the achievement of practical weights at TEFA, this is

greatly influenced by the atmosphere of the Covid 19 pandemic during this research, it even entered PPKM level 4 This means that the global conditions in Balikpapan at that time made the target of TEFA skills practice not maximized. A score of 38 is the middle or average score found in questions 4 and 10. For question number 5, namely the role of DUDI in providing skills training to interns, while for question 10 about production activities in TEFA, the average is smooth. And the highest score of 41 is the score from the question of providing DUDI training to students in internship activities.

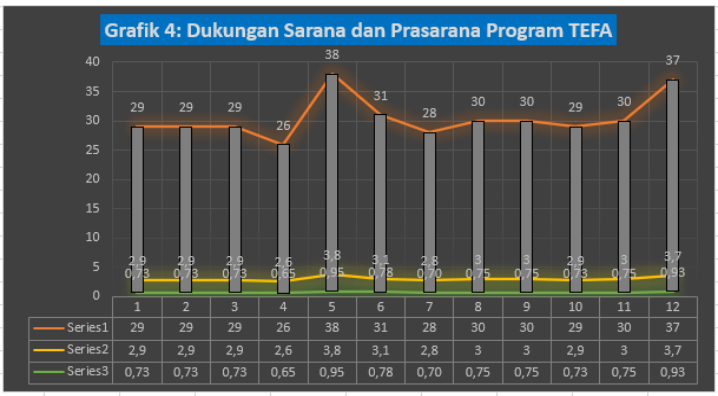


Figure 9. *Support for TEFA Facilities at SMKN4*

Based on the graph above, it is explained that the support of facilities and infrastructure, the lowest score of 33 is about DUDI helping TEFA production materials, this score illustrates that DUDI does not provide assistance in the form of production materials, but DUDI provides skill knowledge materials, a high score of 38 is found in the first, fourth questions and the ninth. Each of the questions regarding the standard of Pratik equipment is recognized by DUDI, the equipment is recorded as functioning properly, and the existing equipment is recognized for its quality by DUDI. Of these three questions, there is a high score of 38, that the collaboration between DUDI and SMKN 4, carries out its function as a TEFA partners are working fine. The second question has a middle score of 36 regarding the quality of TERFA's products recognized by DUDI, this illustrates that DUDI participates in overseeing TEFA's competencies and processes.The results of TEFA products as part of forming students' soft skills. Based on haOther research results show that the level of student work readiness from the knowledge aspect is in the ready category, the skill aspect is in the very ready category. And students' work readiness from the attitude aspect is included in the very ready category,(Mukti, yy)

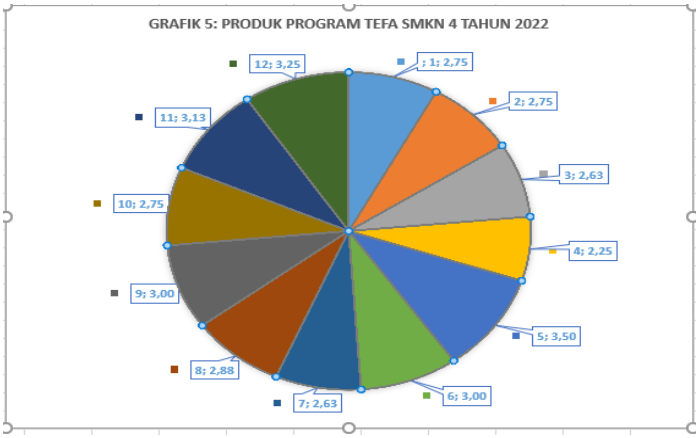


Figure 10. *Vocational High School TEFA Products*

Based on Figure 10: regarding the output of TEFA products, showing the highest score, 38 regarding questions about products planned for consumer orders and products being able to compete with outside products, a middle score of 35 regarding questions about orders coming from the surrounding community. The lowest score of 30 is 2 regarding production capacity and the skill questions of TEFA students are able to work on DUDI products, from this data it means that the lowest score of production capacity and students' ability to produce DUDI orders is still in the low category, because the equipment factor is still incomplete. DUDI, and low production capacity, because orders don't come from DUDI often. The medium score category is 35 out of a maximum score of 48 from this achievement, the average is still in the not maximal category, this is a pandemic period, the liberation of human movement in the school environment has an effect on the size of the order to TEFA. The highest score of 38/48, there are 10 achievement scores, the difference is smaller, this illustrates that orders cannot depend on consumer orders, this means that the marketing team has not been able to run optimally.

The obstacles and solutions for the implementation of TEFA at SMK Negeri 4 Balikpapan are as follows; (1) There is still a lack of understanding of productive teachers in TEFA-based learning, (2) the high cost of production book materials so that it weakens product competition in the market, (3) there are still groups of students who lack initiative in production activities, there are no types of products that can compete in the market. , (4) The limited ability of students in managing business administration results, these findings are used as an evaluation of each studentStudent group learning outcomes are carried out with the concept of performance, not only with tests as is the case in theoretical subjects. Performance assessment is carried out to determine the development of hard-skill and soft-skill competencies (Dedy Mulyasana et al, 2019). The relationship between SMK and industry in TEFA management includes; Products, HR, practical activities, and TEFA product marketing (Widjajanti, 2019).

V. Conclusion

The TEFA policy is prepared based on considerations of formal foundations, internal empowerment of SMKN4 Balikpapan, and the values of the spirit of teachers who have competence from educational qualifications, training from DUDI, providing important provisions in managing TEFA learning. Together with students who are managed in groups as a way to carry out entrepreneurial character education. Curriculum support that directs an integrated project-based learning model gives students confidence to educate themselves to be independent and responsible and to continue to innovate with their creativity. DUDI facilities and infrastructure and support make an important contribution in ensuring the smooth process of managing the TEFA model learning, and the results of the TEFA product while in the position where the TEFA program is running the product's ability to compete with other products on the market still requires a thorough reflection on the TEFA program. The achievement of TEFA success in the good category, from the data of 5 quantitative data elements, namely; (1) teachers, (2) curriculum, (3) practical infrastructure, (4) partnership, (5) products get a maximum score of 41.2/48, thus the success rate is 85, 83% of the total score of 100.

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