

## Teaching Factory Management in Vocational High Schools

Ratna Suhartini

Universitas Negeri Surabaya, Indonesia

Correspondent: [ratnasuhartini@unesa.ac.id](mailto:ratnasuhartini@unesa.ac.id)

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**ABSTRACT:** Management is applied in business, government, universities, schools, industry, and learning. Teaching factory learning is production-based learning or services according to industry standards and procedures. The resulting product is sold, so marketing is needed. Teaching factory learning is a replica industry in schools. Thus, teaching factory is related to management, teachers, students, industry, consumers, and marketing, so that management is needed in its management. Management of teaching factory in vocational high school, regulated according to the implementation of teaching factory. The purpose of this research is to describe the management of the teaching factory, covering the organizational structure and management of the teaching factory. This type of research is qualitative descriptive. The research sample was 14 SMK in East Java. Data collection methods use interviews and observations. The results showed that the management of teaching factories in vocational high schools was different. The organizational structure involves the principal, vice principal, head of expertise program, productive teacher and education personnel. In addition, there are outside parties, namely partner companies and school supervisors. Teaching factory management includes planning that consists of planning learning equipment, planning products, and planning marketing. Implementation includes production, marketing. Supervision includes evaluation of the implementation of teaching factory and follow-up.

**Keywords:** Management, teaching factory, vocational high school.



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## INTRODUCTION

Teaching factory aims to produce competent graduates, meaning graduates have the skills needed by the industry. Teaching factory is industry-based learning, a learning paradigm that integrates learning with the work environment ([Mavrikios et al., 2018](#); [Mavrikios, Georgoulis, et al., 2019](#)). Learning outcomes must produce products and services that are equivalent to products from industry. In its implementation there must be industry as a companion in learning, therefore it takes practitioners from the industry to teach skills. The function of the industry is to provide direction, training, and assistance to teachers, students, and provide the necessary

infrastructure. The teaching factory curriculum is synchronized with the competencies needed by the industry ([Mourtzis et al., 2018, 2021](#)). It takes a similarity of perception between vocational education and industry, about curriculum, learning patterns, products, lab workshops, and marketing ([Wong et al., 2014](#)). Curriculum analysis is carried out to find the right competency content, in accordance with the character of industrial products. Based on curriculum analysis, it is clarified in the learning implementation plan. The learning implementation plan contains learning patterns, products, learning methods and evaluations.

Learning patterns follow the pattern of exercises, work exercises ([Abele et al., 2016](#)). While the assessment is carried out by teachers with the industrial world. From the assessment analyzed the shortcomings of the products produced by students studied, then given training to students about the shortcomings. This training is also attended by teachers, carried out in the industrial world. Training support is a didactic recommendation and technological assistance ([Chryssolouris et al., 2013](#)). The resulting product will be marketed, until it is sold. To sell the product requires marketing. Marketing can be done ostensibly or in collaboration with industry. Applications in learning must be balanced with industry conditions and organizations. From the picture of the teaching factory in the vocational high school fashion study program, it can be seen that learning activities are not only the relationship between teachers and students, but there is a relationship with the industry, with the community as potential buyers of products. Likewise with activities, not only learning activities to make products, but planning, production, evaluation, and marketing activities ([Stavropoulos et al., 2018](#)). With the necessary conditions of regulation, teachers, industry, students, and the type of activities carried out. Management can help organize to be more focused in carrying out work. A study in Vietnam, there are findings of adopting management strategies in the learning process, which provides useful insights for education managers who want to understand, implement and improve knowledge management at their universities ([Le et al., 2022](#); [Pham & Tin, 2022](#); [Thang et al., 2021](#)).

The management of teaching factories in vocational high schools of fashion study programs has been implemented, but the implementation has not been maximized. Management is carried out in accordance with the understanding of each school, but the teaching factory process runs according to the block learning schedule. Sometimes learning is disrupted due to poorly organized management. Limited number of human resources, hr performance workshop conditions, partner industry, and adaptive and normative subject schedules that students must take. HR performance plays an important role in the organization of teaching factory. Performance is substantial of the organizational climate. Resourcefulness and behavior-based can drive the growth of the teaching factory change. More attention is needed on the choice of beradaptasi, the timing of adaptive actions and the selection of means to adapt ([Jooste et al., 2020](#); [Rentzos et al., 2014](#)).

Some research that has been done related to management in learning, namely the process of reforming practical ability in learning requires student participation, cooperation, school support and partner companies ([Singh, 2019](#)). Thus it can improve the quality of learning. Students have competencies according to company expectations. The development of these competencies has an impact on student work readiness. Developing soft skills supports improving the perception

of work readiness. Curriculum and training focused on developing processes, techniques, and work devices. Further research on improvised coaching helps students translate the concept of psychological security into behavior. Psychological security serves to increase creativity and innovation in the team. Thus, there will be a way to bring improvisation into management classes to empower students to become better innovators and collaborators. Introduce career-related interventions, market orientation, and development to improve learning and outcomes ([Morlock et al., 2017](#)). Organizational commitment indicates that a team of co-workers provide support to each other in terms of providing assistance and information relevant to the work so as to increase their sense of connection and commitment. This contributes to the commitment of learning organizations. Thus, research on teaching factory management is needed, namely management in the learning process, related to human resources, student competence and company involvement.

### METHOD

This type of research is qualitative descriptive, according to, research that describes statements about social life that can be applied to context, population, and time periods ([Creswell, 2017](#); [Higham et al., 2019](#); [Sugiyono, 2019](#)). This study has the following properties: (1) Predict and controlling actions through logic, (2) explaining variations, (3) explaining how and why things condition through causation, and (4) providing insights for improving social life ([Anfara & Mertz, 2006](#)). The various approaches used serve as background information for discussions aimed at attracting some new considerations for qualitative researchers ([Moleong, 2018](#); [Yin, 2012](#)).

This research was conducted in 14 SMK fashion design in East Java. The object of research is teaching factory management including: organizational structure, placement of human resources in organizational structure, HR management, teaching factory management and marketing. Data collection methods are interviews, observations and documentation. Respondents are teachers and principals. Interviews are conducted with the manager of the teaching factory, observations are made to the marketing teaching factory, and documentation is carried out in the organization's structure.

### RESULTS AND DISCUSSION

#### 1. Teaching Factory Organization Structure

Organizational structure is the division of tasks, grouping and coordination. The division of duties, functions and authorities needs to be done to distinguish duties and responsibilities towards work ([Chryssolouris et al., 2016](#)). The organizational structure in the teaching factory is structured based on the school's organizational structure, guided by the implementation of teaching factories and partner industry organizations which states that management in the industry can improve innovation capabilities by creating human resources who have knowledge and experience of work quality, motivating to share knowledge and maintain competence ([Mavrikios, Alexopoulos, et al., 2019](#)).

The involvement of school leaders in the teaching factory is very important. The involvement of the deputy principal is part of the organizational structure. Teachers play an important role in the

structure of production, and supervision ([Tisch et al., 2016](#)). While the industry conducts supervision on production activities. Keep an eye out for any incompatibility of existing processes and products are manufactured. The organizational structure of the vocational high school teaching factory is composed of the person in charge, coordinator I, coordinator II, treasurer, secretary and executor of production. The principal is in charge of the teaching factory, responsible for coordinating, controlling and issuing regulations on the management of teaching factories in schools, determining the governance system, appointing a management team, and controlling all teaching factory activities. In carrying out its duties in coordination with the company and the school supervisor ([Kumar et al., 2021](#)).

Coordinator I is the deputy principal of the curriculum section. Because the teaching factory is part of the development of the curriculum and learning process. This is the field of work of the deputy principal of the curriculum section. The task and work of coordinator I is to carry out planning activities, and the implementation of block schedule learning, carrying out technical control on all teaching factory management activities. Coordinator II is the deputy principal of the public relations department, which ensures that the cooperation with the company and the marketing process is carried out with effective and efficient planning and implementation. The Secretary controls incoming letters and outgoing letters, makes inventory of goods, and makes reports on the realization of the implementation of teaching factory learning activities. Treasurer: record receipts and financial assessments at teaching factory learning activities, and Compile financial statements to the principal and school committee. Expertise competencies are the head of the expertise program, tasked with assisting the planning activities for the implementation of block schedule learning to support the implementation of school teaching factory, Designing standard operating procedures for production activities, designing the distribution of teaching factory learning work, conducting goods / services production activities in teaching factory learning ([Engelhardt-Nowitzki et al., 2020](#)). The head of the expertise program and the teachers of productive subjects are competent in the field of fashion production which is focused on the influence of learning organization practices on teacher leadership shows the results that learning organizations have an effect on teacher leadership supported by learning abuse. The results of the study management practices on the quality of human resources showed the results that there is a significant relationship between management to human resources in terms of service quality in the industry, revealing that human resources directly affect the improvement of performance, overall service quality in terms of productivity ([Bedolla et al., 2017](#); [Merkel et al., 2017](#)).

## 2. Teaching Factory Management

Management is a process of using human resources and objects effectively, in order to achieve the goals that have been set, to achieve these goals must be done planning, organizing, directing, coordinating and controlling efforts. Teaching factory manager is human resource management which includes teaching factory managers, principals, industries and students, infrastructure resources ([Mavrikios et al., 2018](#); [Rentzos et al., 2014](#)). To achieve the learning objectives of teaching factory is prepared through planning, organizing, directing, coordination and control. The observations found that planning in the teaching factory is planning the products to be produced. Planning is done by analyzing: 1) curriculum, aligned with processes and products from industry, or incorporating the contents of industrial products into the curriculum. 2). Human resources available in schools are teachers, technicians, administration. Hr is needed as a

companion at the production site, workshop manager, as administration, marketing. 3) Facilities in the school include laboratory workshops, equipment, maintenance, 4) School management, what support can be provided by the school in learning activities, 5) Regional potential, local conditions, as a place that can attract people to buy products from teaching factories, 6) Industrial partners, who can be invited to work together to assist teaching factory learning. 7) Marketing, product plans will be marketed everywhere. The product to be marketed is of industry quality so that prospective buyers are interested in buying ([Mourtzis et al., 2018, 2021](#)).

The study of the results of the documentation shows that planning, is an HR activity, which consists of planning teaching programs, planning implementation strategies and developing teaching factories. The implementation strategy is carried out by analyzing SWOT against: 1) Analysis of business conditions and potential, conducting SWOT analysis on aspects: curriculum, human resources, facilities, financing, management, regional potential, and industry partners; 2) Conducting sales plans, 3) Analysis of tefa products on the curriculum; 4) Analysis of basic competencies and learning activities of learners; 5) Marketing plan; 6) After-sales service; 7) Evaluation of production results. Organizational structure in the teaching factory.

The results of the interview were obtained that the planning had been carried out by all sample schools. The school applies teaching factory in accordance with the basic competencies in the curriculum. Industry companion according to the product. Companies accompany students and teachers on a scheduled basis ([Chryssolouris et al., 2013, 2016](#)). Learning follows work procedures in the industry, which are carried out in a team of teachers and instructors from the company. Student learning outcomes in the form of products have different qualities, depending on the industry that accompanies them during the learning process. Good products are produced by schools that have quality industry partners, in terms of management, work discipline, training and assistance provided during learning. The product is sold to the market as planned. The products of each school are also different in their marketing. Marketing is more widely done in the school environment, because the product is in the form of school uniforms. Products other than uniforms sold in the community are Muslim children's clothes and clothes that have the characteristics of the local school area, namely combination batik clothes. Products sold in the community are able to compete with the market in terms of quality and price. The price is cheaper than the market price.

Organizing is governed by organizational structure. The organizational structure is different, each school is not the same. Organizational structure standards must conform to industry standards ([Carter, 2020](#)). The organizational structure is structured according to the understanding of each school. The organizational structure always involves the principal and other school administrators. The placement of human resources in the organizational structure is not in accordance with its competence. As a result, there is a waste of energy. A lot of the work done by teachers is directly related to the teaching factory. Industry involvement in the organizational structure has not been maximized. Most industries are involved at the beginning of the teaching factory process. For sustainability is still low. Only 2 schools have good cooperation with the school. It also depends on the commitment of the school and industry in entering into a cooperation agreement.



Direction, coordination and control are carried out by the principal. Production implementation instructions are given to productive teachers and students to carry out learning in the workshop. Direction and coordination are carried out before learning begins. Quality Control is carried out by teachers who carry out learning in the workshop. Quality Control is carried out in every production process, at the time of material selection, pattern making, cutting, tailoring and finishing and packing. The purpose of supervision is to avoid fatal errors in the product. If there are errors, they can be corrected immediately. In this case students are involved in supervising the quality of work, so that students know the mistakes made and correct those mistakes. Thus students have the skills to control the quality of the product. Assessments are carried out by industry and teachers. Under supervision, an assessment is also carried out. Assessments are carried out by teachers on the results of student work, using industry standards. Industry involvement in the implementation of assessment and supervision of teaching factory learning is still low. Supervision and assessment are still widely carried out by teachers, not involving the industrial world, so the supervisory function is still dominated by teachers. shows this research provides an opportunity for learners and teachers to continue to dialogue about learning with partnerships ([Joiner & Bakalis, 2006](#)).

Management of Teaching factory in schools, including workshop management, includes layout, order and instructions for the implementation of production is arranged such as workspace in the company This arrangement is based on the level of competence that must be achieved. Based on this arrangement students learn with the situation and working patterns in the industry. Cooperation with the company will benefit both parties. The school gets adequate facilities and infrastructure, equivalent to industry. Students can have competence in accordance with the industry. Guru gained industry-appropriate competencies and teaching models. Industri gets a competent workforce, so there is no need for training anymore. Research Teaching Factory contributes greatly in creating a teamwork environment, innovation, strong relationships with industry and a strong focus on competency development, collaborating with industry collaboration in the latest applied research conducting development projects for the training and development of staff and students. Teaching factory integrates various teaching methods with the aim that the learning process is closer to the actual industry problems. The principle of learning in the form of deductive teaching, new principles derived from known principles and in accordance with those illustrated) and inductive teaching (generalizations of individual findings). According to the teaching factory design, is learning in the industry with an educational and training model. Studying in the industry has a secondary purpose, which can be used in research.

Teaching factory in vocational high school program majoring in fashion adopts garment industry product management. The produk is a shirt, pants, skirt, children's clothing, tunic wear. Sekolah cooperates with the garment industry. Points out that effective collaboration between schools and garments is needed to align with global technological and knowledge advances. Illustrate the importance of human resources to conduct school-industry collaboration to increase trust, innovation, and mutual governance. The school chooses garments according to the characteristics of competencies in the curriculum, the selected garments produce shirts, pants, skirts, children's clothing, tunic clothing. Teaching is managed jointly between the school and industry. Teaching factory includes planning, implementation and assessment. Planning teaching

programs starts from curriculum analysis, which equates curriculum content with industrial products. Lay out the workshop is equalized with the company. Rencana for the implementation of learning is prepared based on industry, namely a project-based learning model. Develop industry-based modules. Industry standard-based assessment. The study of learning placed within the industry will drive the success of students working in the industry. Human Resources and the industrial environment, operational principles and learning, identified as providing impetus for school partnerships with companies. The partnerships that are systematically implemented will be able to jointly produce industry-based curricula and prepare schools to produce graduates who deserve to be employed.

Marketing planning is also carried out on roduk resulting from the teaching factory. HR marketing department markets the product. Rasmula shows that HR skills factors have a big impact on marketing performance. Marketing is done with an e-commerce system. E-commerce is a revolution and a turning point in online business practices and makes a major contribution to the economy. E-commerce is an e-marketing that has several advantages, namely interactive advertising, for example: websites, social networking sites, Google ads, banner ads, video marketing, can reach people optimally, instantly, save time, reduce interaction with people who meet in person. Marketing of teaching factory products can be done with e-commerce, it takes a personal who handles the e marketing section. This can be done by teachers and students.

### CONCLUSION

Teaching factory in SMK fashion design is carried out in accordance with industry management, but the management of the teaching factory of each school is different, its implementation is in accordance with the understanding and characteristics of the school. The school provides support to the teaching factory. Management teaching factory is an arrangement in the teaching factory Penempatan people in the organizational structure tailored to their competence. Everyone is responsible for their work. Interpersonal cooperation is well established. Cooperation with the industry runs in accordance with the agreement made by the deputy principal as the person in charge of teaching factory management including planning, namely planning learning, products and marketing. The implementation of teaching factory is carried out according to planning and produces products equivalent to garment companies, and e-commerce marketing. Supervision is carried out by the principal at the end of learning, while supervision of the production process is carried out by the head of the study program and teachers who teach the teaching factory. Reporting is carried out at the end of the semester, including financial statements and teaching factory programs.

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