



Teacher Models and Strategies Application in Enhancing Graduate Competencies through Vocational School Students' Work Accomplishment in Aceh

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Abstract. This study explores the relationship between vocational education and the industrial sector by examining how teachers at vocational high schools (SMK) in Aceh, Indonesia, apply various learning models and strategies to enhance graduate competencies, particularly in terms of work readiness. With a qualitative approach and descriptive analysis, the research utilized primary data from interviews and secondary data from documentation, focusing on insights from teachers, students, and school principals. Data collection employed purposive sampling and was analyzed through a process of data reduction, display, and verification. The findings indicate that any learning model can yield effective results when teachers demonstrate a high level of competence and motivation. The study underscores the importance of teachers adapting their teaching methods to align with the demands of the 21st-century workplace. Moreover, the research highlights the critical role of vocational education in developing skilled human resources who are prepared to contribute effectively to the industrial sector. The implications of this study suggest that enhancing teacher competencies and optimizing learning strategies are essential for improving the employability of vocational school graduates.

Keywords: Teaching models, Teaching strategies, Vocational High School, Student Competence, Work Accomplishment.

1 Introduction

National Education functions to develop capabilities and shape the character and civilization of a dignified Nation in the context of the intellectual life of the Nation, aiming at developing the potential of students to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, independent, and become democratic and responsible citizens (El-Senousy & Alquda, 2017). Education is also held with the aim of achieving Human Resources (HR) who have the ability to think formulated as HOTS (Higher Order Thinking Skills) which aims to form human resources who have the ability to think and are able to solve various aspects, which are cognitive, affective (behavior/attitude), and psychomotor that must be delivered as a

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unit in learning so that human resource are able to develop innovation and solve problems (R. Mohamed & Lebar, 2017).

According to data from the Central Statistics Agency released in 2019, the United Nations Development Program (UNDP) version of the United Nations Development Program stated that Human Development Index (HDI) ranking of Indonesia's position remained at the position of medium human development country at rank 111 with a value of (0.707), far behind Singapore (9), Brunei Darussalam (43), Malaysia (61), Thailand (77), and the Philippines (106). Meanwhile, the World Economic Forum (WEF) stated that Indonesia's global competitiveness (GCI) in (2014-2015) was ranked 34th with a score of 4.6 along with Chile (33) and Puerto Rico (32). Meanwhile, in 2019, Indonesia's position continued to decline, which was ranked 50th with a value of 64.6 or when compared to 2014 it decreased by three levels. This level is also below Singapore (1), Malaysia (27), and Thailand (40).

According to Imsen et al., (2017) education is a leading sector in nation building; every nation makes teachers the most important part to make changes to its national education system, further Akarowhe, (2017) explains that teachers are one of the important elements in the implementation of education in schools, the role of teachers is excessively important because the efforts and activities of the teacher in creating a good and targeted learning process are maximum. Teachers must be aware that in carrying out their duties, they are always required to be serious and responsive to changes and developments that occur in society, especially in education field. Therefore, teachers are required to have professional abilities and have good performance. Teaching is not easy to do; it is because it is a very complex activity process (Karakozov et al., 2021). Teaching needs to be well planned in order to achieve the goals set, its implementation must be supported by the ability of teachers to apply effective learning models and strategies, and the results need to be evaluated objectively. The application of learning models and strategies must be adapted to the needs of education in the 21st century, in the era of information disclosure and very rapid technological advances, but with implications for moral degradation; thus, 21st century teacher competencies are urgently needed who are able to adapt the learning process, and apply strategies in education-based character, competence, and literacy learning (Fischer et al., 2018).

Vocational High School (SMK) is a formal education pathway to prepare graduates to have excellence in the world of work. Vocational High School is a secondary education school that further deepens talent and expertise in a particular field. Vocational High Schools provide more applicable and focused teaching and prepare students for specific jobs, such as technology and industry, business and management, etc. Thus, SMK graduates should ideally be middle-level workers who are ready to use, in the sense that they can immediately work in the business/industry world. The problems of Vocational Schools today are generally related to limited equipment, low learning practices, especially during the Covid-19 pandemic, and a learning environment that is not suitable for the world of work. This condition can cause the unpreparedness of SMK graduates in entering the work world. Secondary education, especially Vocational Schools, is a critical point because the graduates it produces are mostly direct inputs for the world of work other than higher education. The relationship between the industrial world and vocational education has a very close relationship; it is because vocational

education is the main driver of the development of industrial progress. In addition, people have always valued vocational skills. Several studies have revealed the relationship between the quality of vocational education and economic growth, the fact that people are the main capital for growth (Gonczi, 2020).

Based on the above background and various phenomena in education field in the 21st century, especially in Vocational High Schools (SMK), the researcher wishes to study and research more deeply related to the application of teacher models and strategies in enhancing graduate competence through work skills for vocational high school students in Aceh.

2 Theoretical Review

2.1 Competency Theory

As individual characteristics inherent in humans, competence is seen in the way a person behaves in the workplace. According to Bird, (2019), competence can be sourced from five different types of sources, defined in the following.

1. Motives is something individuals consistently think to take action. For example, someone who has consistent achievement motivation will develop goals that challenge them and take full responsibility for achieving these goals and expect feedback to improve themselves;
2. Traits is a something that makes a person behave or how someone responds to something in a certain way. For examples are self-confidence, self-control, stress or fortitude;
3. Self-Concept is the attitudes and values that a person has. Attitudes and values are measured through a test to respondents to find out what values a person has and what attracts them to do something. For example, someone who is considered worthy of being a leader should have leadership behavior so there is a need for a test of leadership ability
4. Knowledge is information that a person has for a particular field. Knowledge is a complex competency, but sometimes the score on the knowledge test often fails to predict HR performance because the score does not measure the knowledge and skills as what should be done in the job. The knowledge test measures the test participant's ability to choose the most correct answer but cannot see whether or not someone can do a job based on their knowledge
5. Skills is a person's ability to carry out a certain task both physically and mentally. For example, a teacher is able to make a learning program plan related to the teaching and learning process.

2.2 Teacher Competence

According to L. E. Miller et al. (2017), competence is a rational behavior to achieve the required goals in accordance with the expected conditions. Z. Mohamed et al., (2017) also states that teacher competence is the ability of a teacher to carry out obligations responsibly and appropriately. König et al. (2020) stated that teacher competence is a qualitative description of the nature of meaningful teacher behavior. Based on the Regulation of the Minister of National Education of the Republic of Indonesia Number 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies, teacher competency standards are developed as a whole from four main competencies, which are pedagogic, personality, social, and professional competencies. The fourth competency is integrated in teacher performance. According to the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, competence is a set of knowledge, skills, and behaviors that must be possessed, internalized, and controlled by teachers or lecturers in carrying out professional duties.

From this description it can be concluded that competence refers to the ability to carry out something obtained through education, teacher competence to performance and rational actions to meet certain specifications in the implementation of educational tasks. According to Karakozov et al., (2021), teaching profession is a professional job that demands various abilities in the educational process; in line with this, stated Orishev & Burkhonov (2021) "competencies are those tasks, skills, attitudes, values, and appreciation that are deemed critical to successful employment". This statement implies that competence includes tasks, skills, attitudes, values, appreciation given in the context of life success/life income. It can be interpreted that competence is a combination of knowledge, ability, and application in carrying out tasks in the workplace.

Furhtermore, Caena & Redecker (2019) defines competence as mastery of a task, skills, attitudes, and appreciation needed to support success. Oberländer et al., (2020) suggests "a competency is composed of skill, knowledge, and attitude, but in particular the consistent applications of those skills, knowledge, and attitude to the standard of performance required in employment". In other words, competence does not only contain knowledge, skills and attitudes, but the important aspect is the application of the required knowledge, skills, and attitudes in work.

Thus, competence is a person's basic characteristics related to the performance of the criteria for being effective and or excelling in a particular job and situation. Competence is a deep and inherent part of a person's personality and can predict various situations and types of work, then competence is really able to predict anyone whose performance is good or bad, based on certain criteria or standards. Competence refers to the ability to carry out something obtained through education. Teacher competence refers to rational performance and actions to meet certain specifications in carrying out educational tasks. It is said to be rational because it has direction and purpose (Ameli, 2020).

2.3 Learning Model

Based on the official website of the Director General of Vocational Education, Vocational Education Implementation Model can be implemented with 4 types, defined in

the following (Schelter et al., 2018).

1. School model; this learning model was adopted in Indonesia before Repelita VI, its application was fully implemented in schools. This model assumes that everything happening in the workplace can be taught in schools and all learning resources are available in schools.
2. Apprenticeship model; in the basic vocational learning model implemented in schools and core vocational is taught in industry through an apprenticeship system. This model is widely adopted in the United States.
3. Dual system model; this model is a combination of presenting a learning experience in school and work experience in the business world. In this system, the learning system is carried out systematically and integrated with work practices in the business/industry world.
4. Model of a school-based company; this model in Indonesia is known as a production unit. This module is basically to develop the business world in schools with the aim of increasing school income, as well as providing real work experience to students. This model is carried out to reduce the dependence of schools on industry.

2.4 Teacher Strategy

Conceptually, planning strategy is much determined by the method, nature, and process of decision making; thus, it seems that in this case many components participate in the process. The strategy planned or designed must be in accordance with the existing environmental conditions. Stoner and Freeman (Department for Education, 2019) stated that the concept of strategy is defined based on two different perspectives, defined in the following.

1. Strategy is defined as a program to determine and achieve organizational goals and implement its mission. Strategy, in this case, implies that managers play an active role consciously and rationally in formulating organizational strategy. This view is more widely applied in an ever-changing environment.
2. Strategy in this view is defined as a pattern of organizational response to the environment over time. With this definition, the organization has a strategic position, but it is never formulated explicitly.

Based on the description above, it can be explained that strategy implies a continuous intellectual process in analyzing, formulating, sharing and deciding with the decisions taken must have internal consistency that is systematically related to other decisions in various fields and there is no time limit for one type of activity; in addition, it is not necessary that one activity precedes and is preceded by another activity (Boardman et al., 2018).

2.5 Learning Model in Vocational High School

There are seven learning model suggested by the Director General of Vocational High Schools of the Ministry of Education and Culture, the following is an explanation of these learning models(Changwong et al., 2018).

1. Discovery Learning; This learning model encourages students to develop an active and creative way of learning for students to find, investigate, proceed, and conclude themselves. By learning discovery, students can also learn to think analytically and try to solve the problems they are facing on their own so that these habits can be realized in their real lives;
2. Inquiry Learning; Inquiry learning is a learning model that prepares students in situations to conduct their own experiments so that they can think critically, seek, and find answers to a question. The inquiry learning model is student-oriented which aims to develop the ability to think systematically, logically and critically or to develop intellectual abilities as part of the mental process.
3. Problem Based Learning; it is a learning method based on the principle that problems can be used as a starting point to acquire or integrate new knowledge. it can be concluded that PBL is a learning method that encourages students to know how to learn and work together in groups to find solutions to problems in the real world.
4. Project Based Learning; it is a learning method that uses projects/activities as media. Students conduct exploration, assessment, interpretation, synthesis, and information to produce various forms of learning outcomes. Project-Based Learning is a learning method that uses problems as the first step in collecting and integrating new knowledge based on experience in real activities.
5. Production Based Training/Production; this model is an integrated education and training process in the production process, where students are given learning experiences in contextual situations following the flow of industrial work from planning based on orders, implementing and evaluating product, quality control, and post-production service steps.
6. Teaching Factory or Industry-Based Learning; TEFA is a production/service-based learning at SMK level that refers to the standards and procedures applicable in the industry and is carried out in an atmosphere like what happens in industry. The implementation of TEFA requires absolute involvement of the industry as the relevant party in assessing the quality of educational outcomes in SMK. The implementation of TEFA must also involve the government, local governments and stakeholders in making regulating, planning, implementing, and evaluating them.
7. Blended-learning model; it is learning activities that combine face-to-face learning activities with online learning activities. From the aspect of learning theory, approaches, and learning models to achieve the learning objectives

themselves, MBL is learning that combines the advantages of face-to-face and the advantages of online learning.

2.6 Competence of graduates

The expected graduate competency standards after the learning process in vocational high schools are based on the National Standards for Vocational High School Education (SNPSMK) by having nine competencies (Vladimirovna Fursova et al., 2019), such as: Faith and devotion to God almighty; Nationality and love for the homeland; Personal and social character; Literacy; Physical and spiritual health; Creativity; Aesthetics; Technical ability; and Entrepreneurship.

2.7 Framework

The framework of thinking in this research is depicted in Figure 2.1, which is a systematic way of thinking in this dissertation research. The initial stage is to conduct an analysis of teacher competence and performance (Risius & Spohrer, 2017). Teacher performance in this study uses the design of the teacher performance improvement model developed by (Stronge & Tucker, 2020) modified according to this study; then, it is analyzed the strategies and models in the learning process to improve graduate competence through work skills of vocational students in Aceh and analyzes the competence of graduates and employment opportunities and the impact of the application of learning models and strategies that have implications for the competence of graduates of vocational students in Aceh. The complete can be seen in the following figure.

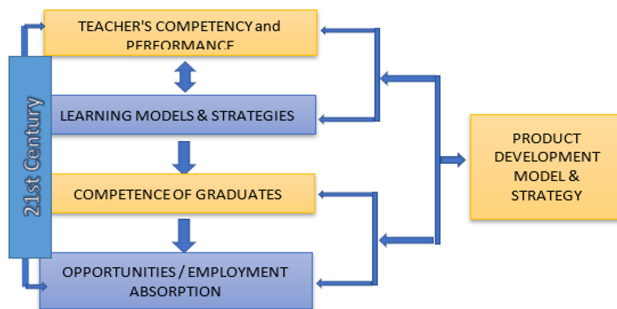


Fig. 1. Research Framework

Research Hypothesis:

1. How is the competence of teachers in applying learning models and strategies to improve the competence of SMK graduates in Aceh?
2. How is the learning strategy applied by the teacher to improve the competence of SMK graduates in Aceh?

3. How is the learning model applied by the teacher to improve the competence of SMK graduates in Aceh?
4. What is the impact of implementing learning models and strategies to improve the competence of SMK graduates in Aceh?

3 Method

3.1 Research Approach

This study uses a qualitative approach with descriptive analysis. This research activity is inseparable from the scope of research in the Doctoral Program in Social Science Education. This study seeks to collect data and information related to teacher models and strategies in improving graduate competence through the work skills of vocational high school students in Aceh. Descriptive research aims to describe the complex social realities that exist in public. This study uses a qualitative approach because it is in accordance with the research problem, namely the Application of Teacher Models and Strategies in improving the competence of graduates through the work skills of SMK students in Aceh.

3.2 Data Source

The data in this study is from information regarding all matters relating to the topic of study and research in this dissertation, mainly the data needed in this research are in the form of secondary data, namely data arranged in indirect forms such as documents, journals, and others related to the formulation of the problem being studied. In this case, the writer will start by determining what is to be researched, looking for sources, assessing these sources and providing interpretations, so that these steps will be integrated in the writing of this dissertation which will later become a research result.

In addition, this research in principle uses two types of data, namely primary data and secondary data. Primary data in this dissertation comes from in-depth interviews with informants, while secondary data comes from documents and research results that serve as a reference as well as to show the virtues of the dissertation research carried out by the researcher. Sources of data for this dissertation are obtained through informants, in this case teachers, students, and school principals, as well as other documents related to the study of the application of teacher models and strategies in improving the competence of graduates through the work skills of SMK students in Aceh.

3.3 Research Subject

Informants in this study are sources of information who know about the research being studied, with the consideration that they are the ones who know the most about research information. The technique of determining the informants in this study uses a purposive sampling technique (Cossham & Johanson, 2019). The selection of research

informants is carried out using a deliberate selection technique based on several considerations. The informants in question are informants who are directly involved or considered to have the ability and understand problems related to teacher models and strategies in improving graduate competencies through work skills for vocational high school students in Aceh. The selection of informants in this study is by classifying the key informants of the research, namely teachers and students of SMKN 1, SMKN 2 and SMKN 3 Banda Aceh and informants supporting the research, namely the principal, deputy principal, school supervisor, school committee, and head of SMK/MAK Aceh province.

3.4 Research Instruments

The research instrument in this study is the researcher. As stated by McGrath et al., (2019) that "researchers in the social field, the research instruments used are often prepared by themselves". Researchers carry out direct research by observation, interviews, and documentation. The instruments used to collect data on teacher models and strategies in improving the competency of vocational school students in Aceh are interview guidelines, observation guidelines, and documentation studies by asking questions formulated in accordance with the research objectives to obtain answers that are used as qualitative data results that can be justified the validity and truth.

3.5 Analysis Method

Credibility Test. The credibility test is carried out to ensure that the data displayed is truly credible and valid so that there is no doubt about the level of truth. This step the author took by collecting a number of qualitative data (interview results) between subjects are compared with one another; then, it is analyzed and adapted to documentary data and finally concluded. Test the credibility of the data by referring to opinions, by following the process of arranging the order of the data, organizing it in a pattern, category and basic description unit so as to give significant meaning to the analysis, explaining the description pattern, and looking for relationships between the dimensions of the description. The data that has been obtained both from the results of interviews, observations and documentation is triangulated as a comparison of data which functions to check the validity of the data.

Data Analysis Technique. Data analysis technique is an important step in the research process. states that Batch & Elmqvist, (2018) "data analysis is an activity after data from all respondents or sources", defined in the following.

1. Data Reduction

This stage is carried out by reviewing all available data from various sources, namely interviews, field observations, and documents, so that the

main points of the project under study related to the research focus can be found. From the data reduction, data related to the application of teacher models and strategies in improving the competence of graduates through the work skills of SMK students in Aceh are obtained.

2. Data Display

At this stage, it is done by summarizing the main things found in a systematic arrangement, namely the data is arranged by classifying it into patterns, themes, units or categories, so that the central theme can be easily identified, then given meaning according to the research material. More specifically, what is meant by data analysis and interpretation is a process of simplification and transformation of raw data piles, so that they become short, concise and meaningful conclusions.

3. Verifying

At this stage, testing is carried out on the conclusions that have been drawn with comparative data sourced from the results of data collection and other supports. This test is intended to see the truth of the results of the analysis so that conclusions can be drawn by connecting or communicating the research results with the theories of experts, especially theories related to teacher models and strategies in improving the competence of SMK graduates in Aceh, which becomes the frame of reference. The researcher and its relation to the findings of other relevant studies, conduct a checking process starting from the orientation stage to the truth of the final data, and finally draw conclusions to be reported as research results.

4 Result and Discussion

Teachers are professionals who must have the necessary competencies in accordance with their fields, especially chemistry teachers. Competencies that must be possessed by individuals as teachers include four aspects, namely pedagogic competence, personality competence, social competence, and professional competence (Trybulkevych, K. Shchegoleva, T., & Gruba, 2021). Teacher competence must continue to improve responding to the need to improve the quality of education which will determine the quality of the learning process which in turn will affect the quality of learning outcomes regarding teacher implementation (König et al., 2020). According to Chege et al., (2020), Indonesia needs new innovations in education aspect such as utilizing information technology to support the success of novel strategies and learning techniques. It can trigger social changes so that they can become teaching materials in preparing students to face the challenges of the 21st century. Teachers need to be able to read the dynamic changing times so that education is able to have an independent mentality, think critically, and creatively. This condition will be able to help students achieving academic success. In addition, it can also train students to develop mastery of technology as a door for individuals to achieve skill advancement (Halimah & Syaddad, 2020).

Good learning strategies and models will not be implemented optimally if they are not balanced with the teacher's ability to implement their competencies so that the competence and ability of teachers is necessary. According to (Gong et al., 2018), the effectiveness of learning students are strongly influenced by the teacher's pedagogic competence. The effectiveness of learning can help improving the expected abilities in accordance with the instructional goals to be achieved and are influenced by internal factors, external factors, and learning strategies (Slameto, in). In addition to competence, another variable that can increase the effectiveness of learning is the teacher's motivation in teaching. By having good quality, it will increase the competence of teachers in mastering their work. Along with increasing teacher competence, it needs to be balanced with high motivation in teaching. Giving rewards to teachers who excel to be more motivated in completing their tasks and responsibilities is one way to increase teacher motivation. This motivation in teaching will lead to encouragement, awareness, and enthusiasm in teaching so that teachers will be motivated to develop themselves and improve their competencies to support learning effectiveness (Schonert-Reichl, 2017).

According to research conducted by Verschaffel et al., (2019), application of ICT-based learning strategies is effective and has a very significant effect on the achievement of computer system learning outcomes in class X students of multi media skills and computer and network engineering at SMK Barunawati Surabaya. Thus, the advantages of ICT-based learning strategies can be used in the learning process in order to optimize the achievement of student learning outcomes, especially in computer systems subjects. One aspect that can determine the success of learning in addition to teacher competence is the selection of the right strategy and in accordance with the objectives. Learning strategies describe the general components of learning tools and procedures that will be used with the material to produce specific learning outcomes for students. Teachers are expected to be able to apply various learning strategies that provide variety in teaching and learning activities. It can affect the results of the learning objectives achieved in every face to face. In essence, there are no good and bad learning strategies, only good or bad teachers. Strategy also has advantages and disadvantages. No matter how great a strategy is, if it is carried out by a teacher who cannot interpret the strategy correctly and in accordance with class conditions and characteristics, the strategy will lose its appeal. As an educator, it would be unwise to only consider teaching experience as a benchmark, for example assuming that the teaching method used in the classroom is superior to other methods (Serholt et al., 2017).

Based on research conducted by Dastile et al., (2020), most of the learning models applied in SMK both theoretical and practical are problem-based learning models (35.51%) and work-based learning models (21.01%). The impact of implementing the learning model on the quality of graduates is that on average 40% of graduates have worked according to their expertise, 41% are absorbed by DUDI (the business world and the industrial world) in the country. Then, from research conducted by Brawn &

Palincsar, (2018), all subjects through the cooperative learning model can help students learn to solve problems through discussion, listening and expressing opinions so that the learning process becomes efficient and effective. Student learning achievement after applying the cooperative learning model is 60% good, 30% less, 10% and the teacher plans the benefits of the existing model well. Based on the results of this study it can be said that the application of the cooperative learning model can improve learning achievement at SDN Kembangan Utara 11 Petang. Cooperative learning prioritizes cooperation between students to achieve learning objectives. Using cooperative learning can change the teacher's role, from teacher-centre to managing students in small groups. Cooperative learning models can be used to teach complex materials, and more importantly, can help teachers to achieve learning objectives with social dimensions and human relationships.

The majority of SMK graduates are always predicted to be ready to work, but it does not represent that way today. One of the goals of Vocational High School is to plan students to become useful human beings, ready to work freely, to fill job opportunities in industry, business and the world of work as specialists at the central level in accordance with the skills and abilities they choose. To achieve this goal, various strategies and appropriate steps have been taken. One of the strategies used is to apply industrial facility-based learning or giving reward to students who appreciate plants for learning how to make merchandise as their logistics discipline demonstration. Processing plant is a learning idea in its natural environment, with the aim of being able to link the benefits between school information needs and mechanisms. Imaginative learning advances and useful practice are learning ideas that are placed to assist executives in making them a reality so that they fit the needs of the modern world.

5 Conclusion

From the results of the research above, it can be concluded that any form of learning strategy and model will be effective if the teacher has good competence and motivation to support learning. Students will be able to accept it well and the strategy will work according to purpose so that the competency strategy for graduates at SMK in Aceh can be effective if teachers have adequate competence in this strategy; it will help students have the skills to face the work field.

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