Applied Science and Innovative Research
ISSN 2474-4972 (Print) ISSN 2474-4980 (Online)
Vol. 4, No. 2, 2020
www.scholink.org/ojs/index.php/asir

*Original Paper*

# A Study of Multi Entry and Multi Exit Education System in Increasing Vocational High School Graduates Skills

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Received: May 18, 2020 Accepted: May 25, 2020 Online Published: May 27, 2020

doi:10.22158/asir.v4n2p70 URL: http://dx.doi.org/10.22158/asir.v4n2p70

***Abstract***

*System of education, included vocational education is seen as one important barometer for ensuring the national education system of a nation. In this context, the quality of teachers, including vocational teachers is the main factor affecting the quality of educational systems. This research focuses on the implementation of a multi entry multi exit system in Vocational Secondary School (VSS) in West Java. This system of learning is the development of integrated and sustainable industry-based learning. It is expected to build a balance between developing competencies and developing work character/culture that support each other to produce vocational graduates ready to work quality and competitiveness. The method used is descriptive evaluative with CIPP (Context, Input, Process and Product) design. The case of this study is to evaluate about how much is the significance of the implementation of the multi entry and exit system implemented at SMK and industry by graduates ready to work. The results of the evaluation of the above problems identified thath the multi entry multi exit system can increase 1-2% of graduates absorbed by the industry. The discussion of this study formulated the need for inovating multi entry multi exit systemby carrying out a series of activities as follows; synchronize curriculum, integrating learning with industry and industry class program, internship teacher and student at industry, self-service work development and or entrepreneurship as a condition to get a diploma.*

***Keywords***

*Multi entry multi exit system, vocational school, industry, work, character*

## 1. Introduction

In a global perspective, each country seems to undertake efforts to revitalize vocational education as an inseparable part to the success of the national education development system it adopts. System of

education, included vocational education is seen as one important barometer for ensuring the national education system of a nation (Wahyudin, 2017). In this context, UNESCO (2012) asserts that the quality of teachers, including vocational teachers is the main factor affecting the quality of educational systems. Another more assertive statement was stated by Barber and Mourshed (2007) and Wahyudin (2016) states that the quality of an educational system, included in vocational education cannot exceed the quality of its teachers, included the vocational teachers.

Now days, Indonesia is undergoing rapid and successful transition to a knowledge- based economy and seeks to transform the TVET system to offer practice based and demand driven programmes aimed at improving employability and participation in lifelong learning. The Ministry of National Education that administers formal TVET has increased its investments and made TVET expansion a priority. The management of Vocational schools have moved from districts to provincial control and management to improve coherence and drive reform of vocational education program. Public vocational schools operate with centralised curricula and centrally managed teacher training with little flexibility to encourage work based learning or soft skills development (Perryman, 2017).

In terms of vocational system, it is widely acknowledged that the quality of teachers and trainers greatly influences with the effectiveness of technical and vocational education and training program in generating qualified and skilled workers. One of the government policies is to improve the quality of vocational education as well as education and vocational skills training. To support the policy, the President of the Republic of Indonesia has issued the Presidential Instruction Number 9 of 2016 on the Revitalization of Vocational Secondary School or in Bahasa Indonesia as *Sekolah Menengah Kejuruan (SMK)* in order to improve the quality and competence of human resources of Indonesia. In fact, one of the determinants of the vocational schoolquality is the availability of qualified teachers who have got certified as professional teachers (Wahyudin, 2020).

It is evident that a number of problems that arise in vocational education, such as the mismatch between education and industry, formulated and implemented policies were not based on the results of adequate research. Revitalization of TVET system is compulsory and includes at least two things. First, improve the recruitment patterns of prospective students to be qualified student with relevant expertise programs. Second, revitalize vocational education. The revitalization includes improving the quality of management, teachers, curriculum development, laboratory facilities and infrastructure, quality of teaching and learning, industrial relations improvement, and the development of vocational education study. One of the program, developing vocatioal school with the characteristic of *Multy entry multi exit system*.

Characteristics of Education in Vocational Schools is vocational education that prepares students to work in certain fields. As stated in the National Education System Law Number 20 Year 2003 article 15 states that vocational education is secondary education that prepares students primarily to work in certain fields. Vocational School is a secondary level vocational education where the graduates are prepared to fill jobs in DU / DI.

The Central Statistics Agency (BPS) in 2018 released the number of unemployed in Indonesia as many as 7.39 million people. Around 11.19% of the total, or around 814 thousand people, are graduates of Vocational Secondary Schools (VSS), graduates of High Schools (SMA) with 9.74%. Unemployment from junior high school graduates was 7.6%, Diploma I/II/III with 6.01% and universities with 5.5%. At the lowest position is 3.51% the level of elementary school education and below. The Head of the West Java Province Education Office in 2018 stated that open unemployment for SMK graduates in West Java was 13.23%. The unemployment rate of SMK graduates in West Java exceeds the percentage of unemployed nationally. Around 46,300 SMK graduates are not absorbed by industry each year.

Initial research on the absorption of vocational graduates conducted by the author with a sample of seven expertise programs at five vocational schools in West Java in 2019, showed that graduates who had no information about work or the possibility of not working were 11.76%, in detail will be seen in Table 1.

**Table 1. Search for SMK Graduates in 2018**

| Graduate Data | Respondents | | | | | | | μ |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Working in Industry | 83,2 | 55,49 | 55,207 | 66,667 | 58,193 | 48,96 | 59,737 | 61,065 |
| Entreprenership | 2,1 | 18,825 | 26,04 | 7,29 | 20,51 | 15,463 | 11,39 | 14,517 |
| Continue to study | 7,9 | 9,605 | 6,25 | 14,473 | 13,253 | 23,22 | 13,887 | 12,655 |
| No Information | 6,8 | 16,075 | 12,503 | 11,567 | 8,0433 | 12,36 | 14,983 | 11,762 |

Characteristic of Education in Vocational Schools is vocational education that prepares students to work in certain fields. As an internal challenge faced by the Indonesian people is the demographic bonus in 2020-2030. That is the number of productive age is more than the number of non-productive age (old age and under age). The fact of the demographic bonus is that 10 out of 15 Indonesians are of productive age, which means 40:60 percent is equal to 123 million people of the Indonesian population are of productive age. Nandini (2019, p. 4) argues that Indonesia is the highest provider of labor in ASEAN, 38.4%. But it was not followed by experts. The ratio of experts and non-experts is 13.4 million experts compared with 113 million non-skilled workers.

The idealism of a vocational school is to plan an expertise-based educational activity. Vocational education planning in the 2015-2019 RPJMN is revealed in the vision of PSMK, namely “The formation of human beings and vocational education ecosystems that are characterized by mutual cooperation”. The quality of the workforce of SMK graduates expected by industry is not just certain competencies / skills but moral quality, spiritual quality, social quality, and psychomotor quality. The expected quality of SMK graduates is a balance between hard skills and soft skills. Graduates who have competent and work ethic, embedded mental / work culture. Therefore they strengthen professional

competence and industry standard.

Responding to the above problems, the President of the Republic of Indonesia issued Presidential Instruction No. 9 of 2016 on 9 September 2016 concerning SMK revitalization. The goal is to improve SMK graduates in order to improve the quality and competitiveness of Indonesian human resources. The essence of the President's instructions addressed to the Minister of Education and Culture is to create a road map for developing SMKs, perfecting and aligning the SMK curriculum with competencies characterized by link and match. Other things are increasing the number and competence of education and vocational education staff, increasing cooperation with Ministries / Institutions, Local Governments, and Business / Industry, increasing access to SMK graduates' certification.

Characteristic of Education in Vocational Schools is vocational education that prepares students to work in certain fields. Like the internal challenges facing the nation Multi entry multi entry learning system is one of the recommended learning services. This learning system has been pioneered in Indonesia since 2004/2005. In 2014 the learning system was re-introduced by the Directorate of Vocational Development at the Indonesian Ministry of Education and Culture. The author conducts an evaluation study of the implementation of the learning system in one of the SMKs in West Java, namely SMK Mandiri, which has implemented a multi-entry multi-exit learning system through the teaching factory program. This research is to evaluate the implementation of multi-entry multi-exit learning programs that can influence the absorption of graduates in the industry. This evaluation is expected to provide information about the strengths and weaknesses of the system. Another thing is this research is expected to be able to provide applicative input to improve the learning of multi-entry multi-exit systems in vocational schools to improve graduates who have a mental / work culture.

Multi-entry multi-exit system is an innovation of the Office of Research and Development Education as an Alternative Shipping Mode (ADM) to solve the problem of increasing the level of dropout, especially high school students. The Ministry of Education and Culture in Noor (2016, p. 2) mentions Multi entry multi exit system is defined as a learning model with industrial characteristics through the synergy of Vocational High Schools with the business or industry world to produce competent graduates in accordance with market needs (Permendikbud 34/2018). The multi-entry multi-exit system is a great hope for the government and the community and graduates to identify gaps between the number of graduates and job opportunities. Implementation of Multi Exit Multi Exit System in Vocational High Schools aims to: (1) Prepare Vocational High School graduates to be workers, and entrepreneurs, (2) Help students choose work fields that are in accordance with their competencies, (3) Foster student creativity through learning by doing , (4) Providing skills needed in the world of work, (5) Extending the scope of recruitment opportunities for Vocational High School graduates, (6) Helping Vocational High School students to prepare themselves for the workforce, and helping establish cooperation with the actual work world, (7) Provides opportunities for Vocational High School students to practice their skills so they can make decisions about the career to be chosen.

The target of the multi entry multi exit system learning program is alignment and integration between

the competencies taught at SMK and the competencies required by industry. The implementation of the multi entry multi exit system learning model is to produce expertise competence, the establishment of cooperative relations with INDUSTRI with special services. Namely vocational services for students who have limited time and money to still be able to get a diploma without having to leave work or go to study at vocational school. The activities of implementing a multi-entry multi-exit system are as follows. First, the Workshop on multi entry multi exit system-based learning documents includes the concept of multi entry multi entry system, preparation for implementing multi entry multi exit system in the Business World/Industrial World. Activities include Learning Implementation Plan (RPP), learning strategies through the block system, multi entry multi exit system work plan and multi entry multi exit system operational documents. Second, competency analysis, material and equipment requirements, work drawings / worksheets and other technical requirements Third, procurement of media / materials / learning tools. Fourth, the implementation of distance learning system consists of technology applications, schedules and teaching staff. Fifth, coordination, evaluation and reporting.

The multi-entry multi-exit system program is very supportive of schools in terms of overcoming teacher shortages and practical infrastructure. This system allows the teacher to function as a counselor. Students get the opportunity to learn firsthand in an industry with standardized infrastructure. Finlay et al. (1998) in Noor (2016, p. 2) state that this training is also useful for individual development. Namely skills development, interpersonal skills, career development, and job development and group development related to training and developing employee needs through learning, training, and development. Students can obtain certain subjects to develop their skills as interpersonal skills. The components of the multi entry multi exit system learning are (1) curriculum documents consisting of learning content, competency standards, syllabus, lesson plans and worksheets. (2) infrastructure / learning media. (3) teaching and educational staff (4) learning block system (5) financing and (6). scoring system. The learning pattern of multi entry multi exit system is carried out for four semesters, from semester three to semester six. Every semester student gets learning at school for three months then continue studying in the industry for three months.

The target of the multi entry multi exit system learning program is alignment and integration between the competencies taught at SMK and the competencies required by industry. The implementation of the multi entry multi exit system learning model is to produce expertise competence, the establishment of cooperative relations with INDUSTRI with special services. Namely SMK services for students who have limited time and money to still be able to get a diploma without this research method is descriptive evaluative. The method is expected to be able to describe a fact systematically and accurately and provide a description of the characteristics of an object or subject being studied appropriately. Descriptive research is a basic form of research with the aim to describe or describe existing phenomena, both natural phenomena and human engineering. Evaluative research is a design and evaluation procedure in collecting and analyzing data systematically to determine the value or benefits of practice (education). In the evaluation activities, researchers used the CIPP evaluation

model design (Context, Input, Process and Product).

Stufflebeam (1960) in Yusuf (2015, p. 123) says that CIPP is short for Context, Input, process and Product). Yusuf (2015, p. 123) says that in principle this model is used for evaluation of programs and education (programs and products). The CIPP model includes a comprehensive model, its elements are a systematic and structured process to accommodate evaluation needs. CIPP is an evaluation approach that focuses on decisions and emphasizes providing systematic information for program management and operations. Yusuf (2015, p. 124) says that the context is intended to provide information to formulate "Goals and Objectives". The CIPP model in this evaluation includes a comprehensive model. This model is characterized by a systematic and structured process to accommodate evaluation needs. Context evaluation activities are carried out by analyzing the objectives and analysis results of the application of the multi-entry multi-exit system in West Java Vocational Schools. The first objective is to identify and evaluate the basic needs of multi-entry multi-exit systems at SMK. The second objective is to analyze aspects of supporting multi-entrance multi-exit systems in SMK. The third objective is to analyze the implementation of integrated sustainable programs in SMKs and the fourth objective determines the importance of implementing multi-entry systems conducted at SMKs for graduates who are ready to work.

## 2. Research Methods

In the evaluation activities, researchers use the CIPP evaluation model design (Context, Input, Process and Product). Stufflebeam in Yusuf (2015) in this evaluation activity, researchers used a flowchart with the CIPP evaluation model design. This model was developed by Stufflebeam (1960), CIPP is short for Context, Input, process and Product). Yusuf (2015, p. 123) says that in principle this model is used for program and education evaluation (programs and products). The CIPP model is a comprehensive model, the elements are systematic and structured processes that accommodate the evaluation needs. CIPP is an evaluation approach that focuses on decisions and emphasizes providing systematic information for program management and operations. Yusuf (2015, p. 124) says that the context is intended to provide information to formulate "Goals and Objectives". Context evaluation activities are carried out by analyzing the objectives and analysis results of the implementation of the multi-entry multi exit learning system at Cianjur Vocational School. The main objective of this learning system is to improve the competence of vocational graduates who have a character/ work culture with direct learning based on products / services. Thus, graduates have skills that are ready to work and the result of this learning system is the absorption of graduates in industry. Input evaluation activities related to what are crucial factors that have not been optimal from the readiness of SMK in implementing this learning system, industrial involvement, supporting activities of human resources and infrastructure. Process evaluation activities are carried out by analyzing the implementation of adaptive, normative and productive learning. Analysis of the use of infrastructure and learning media, educators, students and industry couples. Product evaluation activities are carried out by analyzing the results of competency tests and

tracking the absorption of vocational graduates who are absorbed directly by industry, graduates who are entrepreneurs, graduates who continue and graduates who are not traced to the possibility of being unemployed.

**Table 2. Research Model Scheme**

| No | Evaluation components | Evaluation Aspects |
|---|---|---|
| 1 | Konteks | 1. Gruate competencies with good character ang ready to work<br>2. Learning Assessment System |
| 2 | Input | 1. Supporting aspects for educational workers<br>2. Supporting fasilities for fasilities and budgets |
| 3 | Proses | 1. Collaborative program between school and industries<br>2. Ollaborative ptogram for supporting character and culture |
| | Product | 1. Students Assessent report and competency exam<br>2. Graduates absorbed to industry |

Aspects competency evaluation aspects and learning assessment systems are closely related to graduate competency standards and content standards. Activities include evaluating graduate competency standards, learning content and burdens, annual learning programs and semester learning programs, syllabus, Learning Implementation Plan (RPP), teaching materials, worksheets, daily work journals, learning methods and assessment tools. Evaluation instruments in the form of documents.

The evaluation aspects of teaching and educational staff are composed of supervisors from the SMK and supervisors from the industry, administrative staff from the SMK and administrative staff from the industry. While the aspects of facilities and infrastructure consist of distance learning devices and other communication tools. The financing aspect consists of income in the form of financial administrative burdens that must be paid by students, and other sources such as funding system and so forth and outcomes in the form of operational costs of multi entry multi exit learning. Evaluation instruments take the form of observation and interviews.

The evaluation aspects of the integrated learning process of SMK and industry include block system learning methods, work schedules at industry and distance learning activities schedules and independently structured tasks. While the aspect of evaluating the process of cohesiveness between subjects to strengthen the character / work culture consists of teaching materials and learning scenarios. evaluation instruments in the form of documents and interviews.

The evaluation aspects of the student's student assessment report and competency test consist of an academic calendar in which there is a midterm assessment, end of semester assessment, school exams, national exams, and competency tests. While the aspect of evaluating the absorption of graduates is the sustainability of post-graduate graduates in SMK and in industry. Do graduates continue their working careers at the same industry or other industry, or are they self-employed or also continue their studies to

a higher level. Evaluation instruments in the form of documents.

The sampling technique in this study uses cluster random sampling, which is research sampling based on specific groups. The group taken was 12th grade students of the Motorcycle and Business Engineering (TBSM) vocational package from Mandiri Cianjur. The research respondents consisted of the principal, head of the expertise program, normative, adaptive and productive subject teachers, administrative staff and students of 12 TBSM SMK Mandiri Bersemi.

## 3. Research Result

The results of the evaluation of graduate competency standard documents and content standards consisting of Core Competencies and Basic Competencies (KI & KD), content and burden of learning, annual learning programs and semester learning programs, syllabus, Learning Implementation Plan (RPP), teaching materials, worksheets, journals daily activities and assessment tools. Respondent data on the readiness of multi entry multi exit learning components get a response of 3.02, which means 75% of respondents answered ready with the average category is sufficient.

The results of observations and interviews about the standards of students, standards of educators and education staff, infrastructure standards and financing standards in organizing multi-entry multi-exit learning conducted by researchers with meticulous objects of several SMK samples. The results get a 96.75% response in the very feasible category.

The results of the evaluation of documents and interviews about the standard process that consists of distance learning methods and structured self-help block system, work schedule in industry, schedule of learning activities, teaching materials and learning scenarios. The results get an 80.00% response to the category of the learning process running smoothly.

The results of the document evaluation of the assessment standard consisting of the midterm assessment schedule, end of semester assessment, school exams, national exams, and competency tests, get a 100% response to the very well implemented category. While tracking the sustainability of post-graduate education is 60% working in industry practice, 20% working in other industry, 10% are self-employed, 10 continue to study at a higher level.

The results of the evaluation of the context, input, process and product of the multi-entry multi exit learning system in SMK. All components showed good results. The data shows that there is a large influence of the multi-entry multi exit learning system on the competence of vocational graduates who have character and are ready to work.

## 4. Research Discussion

Learning block system is recommended to be applied at the Vocational School level. This is to overcome the limitations of school infrastructure, study time and teaching staff. These three components are important in implementing block system learning. Implementation of learning block systems must be supported by facilities or infrastructure that refers to certain competencies, certain

time intervals and certain teaching staff. As with maritime competence, to optimize learning competence it is strongly recommended for direct learning from the time block system, places, facilities and educators who sail in the sea in a certain period of time. Stages of integrated thematic block learning system as stated by Rusman (2015, pp. 150-154). Namely choosing / setting a theme, analyzing SKL, IC, basic competencies, and making indicators. Another thing is to make a mapping relationship between basic competencies and indicators with themes, create a network of basic competencies, compile an integrated thematic syllabus.

Based on Permendikbud No. 73 of 2013 that thematic learning integrated with the block system in vocational schools can be done in three forms. Namely (i) Dual System Education (PSG) pattern; (ii) Multi Entry-Multi Exit (MEME), and (iii) Distance education. PSG is carried out with block duration of four months to one year. MEME has a flexible time that can be done half of the educational process time for example six years in school two years in industry or other competency training. Distance education, students in vocational schools can complete their education without having to be physically present at school. Student internships aim to provide hands-on learning experiences in the business and industrial world. An internship is an implementation of a Dual System Education and a Multi Entry-Multi Exit learning program.

Industrial work practices are part of PSG as a joint program between the Vocational and Industrial Schools carried out in the business, industrial world. Dikmenjur (2008: 3) states that apprenticeship is a pattern of organizing education and training that is managed jointly between SMKs and industry / professional associations as Partner Institutions. The activities include planning, implementation to evaluation and certification which are integrated programs using various alternative forms of implementation, such as daily releases, block releases and so on. Implementation of Industrial Work Practices (Prakerin) will help students to strengthen learning outcomes obtained at school and equip students with real experience in accordance with selected competencies. Hamalik (2007, p. 93) states that the benefits of industrial work practices are (1) fostering high work attitudes, (2) students gain competencies not found in school, (3) students can contribute to the workforce in the company, (4) provide motivation and improve students' work ethic, (5) strengthen cooperative relations between schools and partner institutions, (6) enable industries to provide assistance to schools, such as teacher internships, practical assistance, etc. and (7) as a promotion for SMK graduates.

Multi Entry-Multi Exit is an embodiment of the concept of education with an open system. This program provides students the opportunity to obtain services flexibly in completing education. With this pattern, students in vocational schools can take part-time education because while working. The concept of Multi Entry-Multi Exit used by vocational education can be done through a modular system. Each module has a certain competency achievement and the person who has achieved it is entitled to a competency certificate. Multi Entry-Multi Exit E which is supported by a modular pattern in SMK will facilitate integration between SMK and Industry. The implementation of Multi Entry-Multi Exit has been explained by BSNP below.

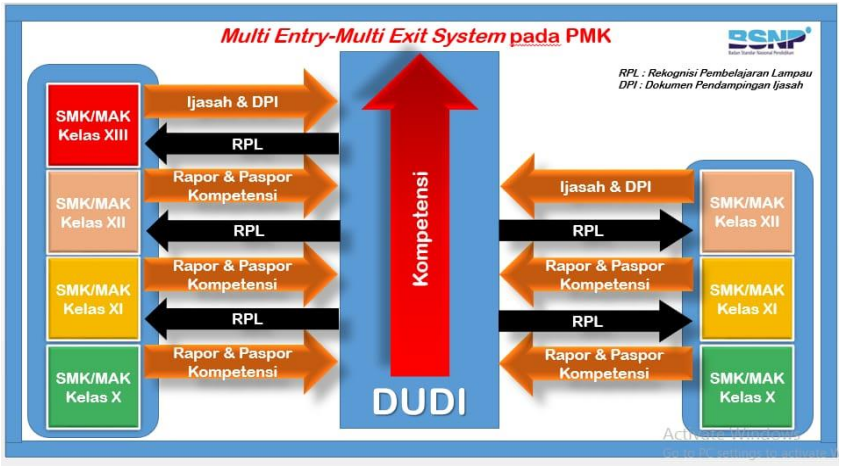


**Figure 1. Multi Entry-Multi Exit & Apprenticeship Learning System**

Samani (2009, p. 38, p. 91) Multi-entry-multi-exit model, as an embodiment of the concept of education with an open system is very compatible with patterns of learning in vocational education. With the principle of multi-entry multi-exit allows vocational students who already have a number of competencies, get the opportunity to work in the world of work, it is possible for students to leave school. If students want to return to education (school) to complete their education program (Vocational Schools) then the school must be open to accept it and appreciate the expertise that students have gained from their work experience. In addition, it is also possible to change the path from the academic path to the professional path. Or vice versa through bridging training or bridging courses. Bridging training is for academic path students who will move to the professional / vocational track. While the bridging course is for vocational training program students who move to the academic track.

There are several factors that contribute to the successful implementation of MEES. First, is the flexibility of time for students to determine their schedule. Through this, students have more flexible time to continue their studies. Second, the curriculum and learning materials are specifically designed for MEES students with the help of members from the target industry and the business sector. As a result, students can obtain certificates and gain skills to work. There is a strong commitment from the community and industry and schools to help students complete their studies. This reduces the number of dropouts and helps unskilled workers to obtain the skills they need. Third, MEES is carried out in schools, especially vocational schools that have links and compatibility with industry and the business world. Link and match mean that school programs, especially the MEES program and vocational school programs must relate to the needs of the company, both soft skills and hard skills. Soft skills refer to programs and hard skills refer to skills needed by the company. Link and match are needed to ensure that products or graduates of vocational schools will be useful for companies and also graduates will immediately work in companies that need vocational school graduate skills.

Fourth, besides MOEC, there are other institutions, both government and non-government, that support MEME to ensure its success. The National Government provides computers, books and learning

facilities. Age is not a requirement in MEME, recognition of competency based on industry level, provision of capacity building scholarships for principals is done by inviting principals to be part of the government innovation team. Student competencies that are industry approved and help students to strengthen the skills needed by the industry to get certificates based on links and match programs. Graduates are given the opportunity to work in companies.

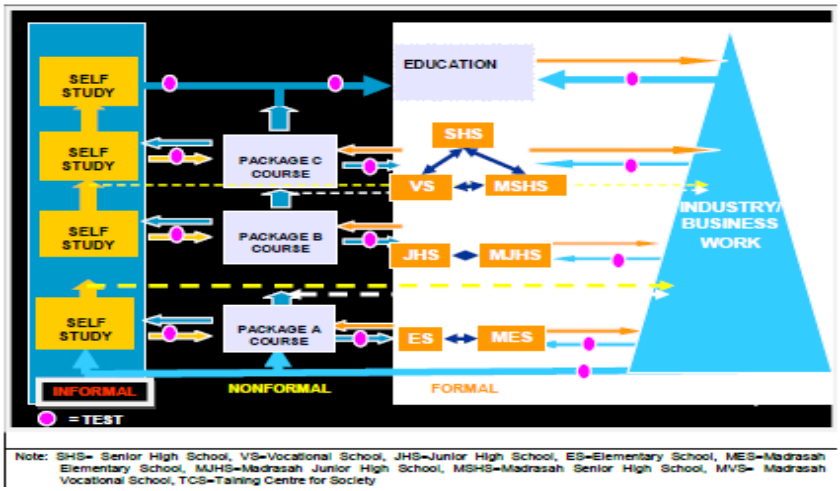


**Figure 2. The Process of Study in Multi Entry Multi Exit System**

The main aim of SMK is to prepare graduates to work according to their area of expertise in a professional manner. However, in the process of link-based learning and compatibility with the business / industry world at the Vocational School it has not been running effectively, so it requires equal cooperation and synergy between the Vocational School and the business/industry world, this link and compatibility is one of the integrated learning programs (integrated).

The integration of character with productive subjects is motivated by the continuity of work processes. To do work for a long period of time, it is necessary to establish good communication between people, harmonious communication with superiors, communication that is in line with subordinates, in long-term work interactions requires quality hard skills and also soft soft-skills. To stay in working it is necessary to strengthen competencies and also expand networks. This integration is better known as interdisciplinary. In networking with others, the dynamics of treatment often arise, which can sometimes lead to tissue harmonization or even disharmony, due to various characteristics and various interests.

Yuningsih (2017) argues that Internships in business and industry will foster positive characters for vocational students such as working with pleasure, perseverance, perseverance, conscience, and patience in protecting, caring for and protecting plants, innovative and creative zeal, dare to experiment, desire to experiment keep learning, open minded (open minded) new science and technology.

The characteristics of the educational outcomes needed by students are religion, namely obedience and

sincerity in understanding and applying religious teachings (the flow of beliefs) that are embraced, including in this case is a tolerant attitude towards the implementation of religious worship (flow of beliefs), and live in harmony and side by side. Honest, namely attitudes and behaviors that reflect the unity between knowledge, words, and deeds (knowing what is right, saying what is right, and doing what is right) so as to make the person concerned as someone who can be trusted. Tolerance, namely attitudes and behaviors that reflect respect for religious differences, the flow of beliefs, ethnicity, customs, language, race, ethnicity, opinions, and other things that are different from them consciously and openly, and can live peacefully amid differences the. Discipline, which is habits and actions that are consistent with all forms of applicable rules or regulations. Hard work, which is a behavior that shows earnest effort (struggling to the last drop of blood) in completing various tasks, problems, work, etc. Creative, namely attitudes and behaviors that reflect innovation in various aspects of solving problems, so they always find new ways, even new results that are better than before. Independent, namely attitudes and behaviors that do not depend on others in completing various tasks and problems.

Curiosity, which is a way of thinking, attitudes, and behavior that reflects curiosity and curiosity about everything that is seen, heard, and studied more deeply. The spirit of nationalism or nationalism, namely attitudes and actions that prioritize the interests of the nation and state above personal or individual and group interests. Communicative, happy to be friendly or proactive, ie open attitudes and actions towards others through polite communication so as to create good collaborative collaboration. Love of peace, namely attitudes and behaviors that reflect an atmosphere of peace, security, calm, and comfort for their presence in a particular community or community. Caring for the environment, the attitudes and actions that always try to maintain and preserve the surrounding environment. Social care, namely attitudes and actions that reflect concern for others and people who need it. Responsibility, namely the attitude and behavior of a person in carrying out their duties and obligations, both related to oneself, social, community, nation, state, and religion. 18 values in character education above have been recommended by the Ministry of National Education and must be developed in all schools in an effort to build the nation's character through education in schools or madrasas.

M. Abdul Somad et al. (2018), mentioned work character education to improve the quality of vocational graduates. Namely, the characteristics needed in a job when in the field in accordance with work character education to improve the quality of vocational graduates. There are three mental / work cultures that must be possessed by vocational graduates. These are: moral character, work character and professional character.

Moral character underlies work character and professional character. The most important moral characteristics from the perspective of vocational leadership are: religion (especially devout worship), humility (not arrogant and not too low in self-esteem), courtesy and respect (to parents, teachers, education personnel, and others), attention and tolerance.

The third character is the character of the profession. This character has touched on all competencies in the Vocational School, the expertise of Technology and Engineering must have a character that is

diligent, conscientious, careful and strong. Mining energy expertise must be diligent, conscientious, cautious and adventurous. Information and communication technology expertise must have a character that is diligent, conscientious, innovative and guaranteed, agribusiness and agrotechnology skills must have creative, innovative, packaging and sales skills, health skills and social workers must have Caring character (care about empathy), be patient (steadfast, tough), and careful, maritime expertise must have a character who is good at swimming, cautious, and adventurous. The field of business and management must have character, look attractive, agile, thorough, and have sales skills. The tourism sector must have attractive looking characters, possess communication skills, and believe in themselves. The field of artistic expertise and creative industries must have artistic, accurate, thorough, and creative characters.

Character development requires continuous coaching simulation so that it becomes a strong and strong mental habit. Learning English may be smooth for three months but disciplined learning will not be achieved in three months, disciplined learning cannot be a partial gem. Discipline learning must be integrated in all learning activities in both curricular or extra-curricular curricular activities. Discipline learning cannot be interrupted and in terms of / blocks disciplinary learning must be continuous over a long period of time. The implementation of multi entry multi-exit system curriculum and teaching in vocational schools has shown that there is a lack of practical time for students to get to know more about work culture that exists in the business or industrial world.

Continuous learning is intended to prepare graduates who are ready to work. Following are the needs of integrated and sustainable industry-based learning activities for vocational students. The activity starts from the initial education activities about the world of work followed by direct learning with industry visits, industrial work practices, and internships in industry, then learning independent work or entrepreneurship with industrial class activities and entrepreneurial leadership (Segara, 2015). Education for sustainability (ESD) is a lifelong learning process that aims to inform and engage residents so that they also have creative, scientific and social literacy problem solving skills, and are then committed to being bound to personal and group responsibilities. This action will guarantee an economically prosperous environment in the future.

The problem faced by SMKs is the difficulty in finding a sustainable industry. Supporting aspects of the multi-exit multi-entry system program include the development of industry-based creative industries 4.0, the development of production units, the development of business centers and the development of entrepreneurial learning. Changes in the industry in Indonesia are felt very slowly, especially local industries that feel and feel excluded and alienated from their environment. Traditional methods which are still widely practiced by industry players are not able to stem the flow of global competition, so it is deemed necessary to have a revolution in the industrial field called the industrial revolution 4.0.

The minds of academics continue to develop to produce innovations and innovations that are positive and better. The industrial revolution 4.0 was connected with the continuation of the civilization of

society in its time. The following is the history of the industrial revolution, quoted from Wahyudin (2019, p. 10).

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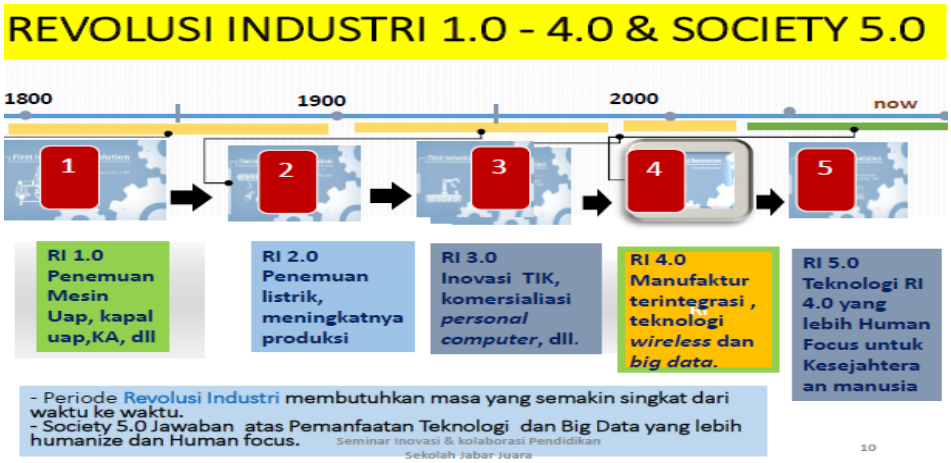


**Chart 4.1: Stages of the Industrial Revolution**

The industrial revolution 4.0 initially took place in the manufacturing sector which was marked by the use of the Internet of Things, cloud, automation with the use of robots and Artificial Intelligence (AI). Then the industrial process becomes increasingly complex with the integration of the production process with the internet. In 2018, Carvalho, Cazarini and Gerolamo wrote about the positive prospects for sustainable manufacturing. This is of course interesting with the many concerns that the industrial revolution has damaged the environment. There are several aspects discussed by them regarding how ideally the manufacturing industry would build its business model to be sustainable.

Wahyudin (2019, pp. 12-13) states that there are six main principles of the industrial revolution 4.0, namely Interoperability, the existence of decentralized industry 4.0, Virtualization. Real-Time Capabilities, Modularity, Service Orientation. Interoperability, namely the exchange of functions

between machines and various different equipment in the manufacturing industry. This capability will extend engine life and reduce machine waste from industry. And will increase the efficiency of machine use without the need to make a redesign that is sustainable.

Real-time capabilities, which will help to adapt to better resource use. Speed up the response to make changes to energy supply. If there is a change in consumer behavior that impacts on demand, the industry can reduce the risk of overproduction. Modularity. This capability will increase or decrease the production process. This is related to how to improve the ability of old machines to be reused. This principle is closely related to the benefits of interoperability.

The influence of the industrial revolution 4.0 and civilization 5.0 in education was enormous, especially in the use of technology in education. There are eight basic information technologies where the main actors are academics from elementary to high school namely the Internet of Thing (IoT), Augmented Reality (AR), Virtual Reality (VR), Blockchain, Artificial Intelligence (AI), 3D printing, Drones and Robots Wahyudin (2019, p. 14) illustrates in the diagram as shown below.

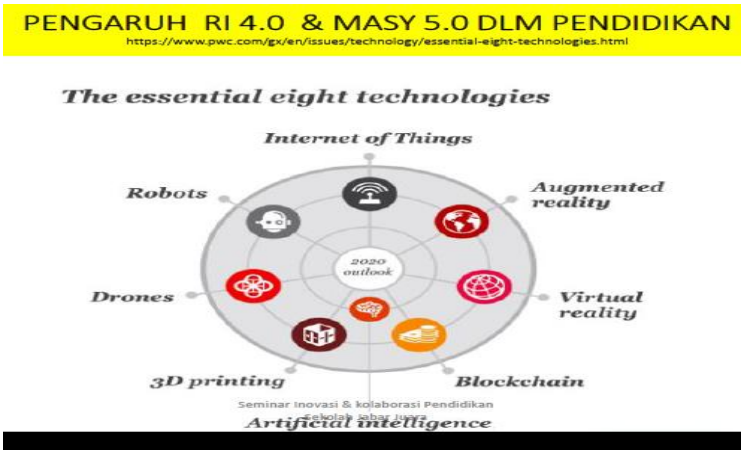


**Chart 4.2: RI Technology Scheme 4.0**

The Industrial Revolution 4.0 and Civilization 5.0 will have a major impact on learning in schools. This shows there is a transformation of large-scale learning and must be addressed by all school members. Namely learning becomes more flexible, by utilizing variations of learning resources, students can interact with many sources other than the teacher, learn more individually / personally according to talent interests, classrooms can occur anywhere, in the community, not only in schools, learning can be done anywhere. Wahyudin (2019, p. 28) explains in the chart below.


**Chart 4.3: Learning Transformation**

In response to this, the teacher was asked to make adjustments and updates in learning. Learning innovation refers to the transformation of learning as an impact of the development of the industrial revolution 4.0 and civilization 5.0. Another thing that deserves attention is the utilization of the existence of blended and hybrid learning by collaborating in terms of media, place, time and learning system. Wahyudin (2020, p. 29) explains learning innovation as the following.

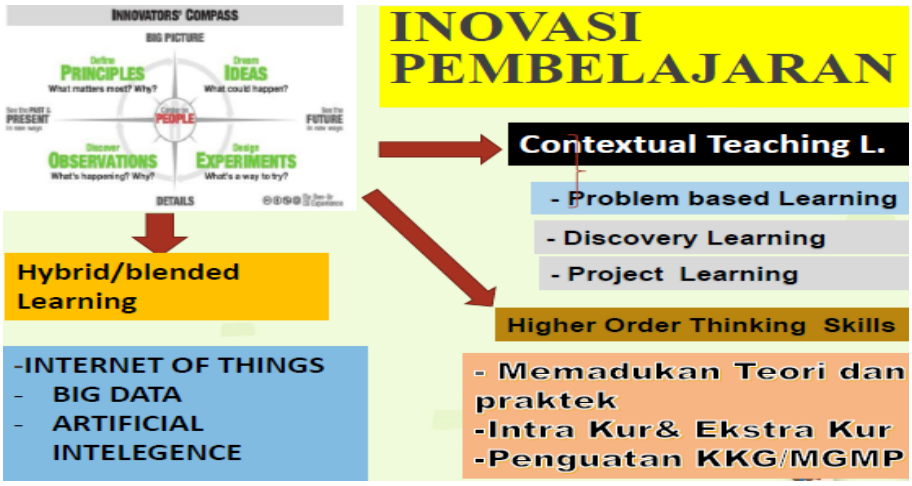


**Chart 4.4: RI Learning Innovation 4.0-5.0**

The multi-entry multi-exit system has the potential to shape the character and competency of student habits. The system is learning innovation that is bounded between theory and practice. In one period students practiced in industry and another period studied in school. So students are truly experts in one thing. Integrated and continuing education is also very effective in connecting the separate distance between business classes and classes at school, as well as between classes at school and the community. Following is an overview of the academic calendar in order to implement a multi-entry multi-exit system.

**Table 3. Academic Calender to Implementate Multi Entry Multi Exit Systems**

| No | Indicator | Activity | Information |
|---|---|---|---|
| 1 | Grow Discipline character and hard work | Incorporate work culture subjects | Kls X semester 1 dan 2 |
| 2 | Direct learning experience and Grow mental / work culture | Industry visit | Kls x akhir sem 1 |
| | | Industrial Work Practices | Kls XI |
| 3 | Understand about work preparation | Industrial class | Kls XI Akhir |
| | Mental Strengthening ready for work | Internship at INDUSTRI | Kls XII Awal |
| 4 | Growing mental entrepreneurship | Bakti Mandiri/ (*entrepreneur leadership*) | Kls XII |
| 5 | Absorbed at industry | Manpower Recruitment | Kls XII Final |

This series of learning is academic management as an effort to manage time in developing competencies (capacity building) that are ready to work for students. Academic management shows the stages to educate vocational students from the start with initial information about the situation of work culture in the industrial world to the determination of the selection after graduating from vocational school.

## 5. Conclusion

1. Multi-entry multi-exit system can increase graduates absorbed by industry. Through this system synchronization of curriculum and integration of learning in class and industry can be done optimally. Another thing is flexibility in students' learning while still working in the industry.

2. Through the multi-entry multi-exit system, vocational schools can increase the competencies of graduates to be ready to work and deserve to be excellent human beings. Indicators of superior humans, namely religion, intelligence, physical-mental, character. The curriculum content of the integrated vocational teaching program in an integrated sustainable factory is very closely related to the superior people listed in the table above. The normative curriculum domain is closely related to religion and character, the adaptive curriculum domain is closely related to the intelligent and productive curriculum closely related to physical-mental.

3. Implementation of multi-entry multy exit learning system shows significant results on improving the quality of superior human resources at SMK graduates.

4. This learning system ensures SMK graduates have a strong and good work character as well as an industrial culture that is inherent in day to day work activities so that SMK graduates are ready to face global challenges in the period of scientific / technological advancements and industrial revolution 4.0.

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