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EFFORTS AND PROBLEMS OF MGMP (SUBJECT TEACHERS' MEETING) IN VOCATIONAL SCHOOL IN SOUTH KALIMANTAN IN FACING THE INDUSTRIAL REVOLUTION 4.0

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ABSTRACT

The industrial revolution 4.0 is not only affected the business world but also the world of education, because education is the main process in preparing the workforce in the business world. The existence of MGMP as a place for subject teachers should be a center for the development of education in accordance with the industrial revolution 4.0. The aims are (1) identify the efforts made by the Vocational School's Skills of MGMP in South Kalimantan in facing the industrial revolution era 4.0, (2), identify the problems faced by the MGMP of Skills at Vocational School in South Kalimantan in facing the era of the industrial revolution 4.0. Qualitative research by applying interpretive research models. Respondents from this study with a total number of ... teachers. Data collected through interview and observation techniques. Data were analyzed using interactive data analysis techniques consisting of three stages, which are: data reduction, data display, and drawing conclusions. The results are (1) the efforts made by the MGMP on Vocational School's Skills in South Kalimantan in facing the industrial revolution 4.0 are still limited to the preparation of lesson plans and preparation of semester test questions, (2) there are some problems in dealing with revolution 4.0, which are: (a) not yet developing a design-based learning model, problem- based learning, project-based learning, and discovery-based learning, (b) there is no synchronization in MGMP scheduling of each vocational school, this has an impact on teachers to collaborate on skills, and (c) the MGMP forum has not been represented as a forum for deliberation, where the supporting facilities which are not completeyet. Efforts done by MGMP at Vocational School's Skills in South Kalimantan are not optimal and there are several problems in terms of organizational

management, development of learning models, and facilities and infrastructure to deal with the revolution 4.0. Efforts done by MGMP at Vocational School's Skills in South Kalimantan need to be optimized by carrying out activities that support the implementation of education 4.0 to deal with the 4.0 revolution. The problems faced need to immediately find a solution by involving the relevant parties.

BACKGROUND

The Industrial Revolution 4.0 is the latest development from the industrial world. In simple terms the industrial revolution 4.0 can be defined as the era of smart industries which utilize sophisticated information technology, connecting one system with other systems, not only to automate production but also significantly increase the amount of production more effectively and efficiently (Tay, Aziati, Chuan, & Ahmad, 2018). In general there are four core components of the 4.0 revolution, namely cyber-physical systems (networks that connect the real world with virtual worlds), internet of things (IoT), internet of services (IoS), and smart factories(Roblek, Meško, & Krapež, 2016).If seen from the positive side, the industrial revolution 4.0 contributes in: providing appropriate and fast solutions, transparency and efficiency by providing real time data, increasing efficiency and competitiveness to achieve work targets, increasing productivity, reducing the risk of errors, uniformizing production costs for working goods in units and mass production, increasing product competitiveness supported by the sophistication of the internet system (Lavanya, Shylaja, & Santhosh, 2017).

In addition, to have a positive impact, the existence of the industrial revolution 4.0 requires the readiness of industry doers to implement it. This readiness, of course, includes the readiness of human resources, facilities and infrastructure, as well as capital, because to be able to use sophisticated technology requires an investment fund which is not small (Ślusarczyk, 2018). If not ready, then the consequence that must be accepted is to lag with other industries that are more ready. The use of sophisticated information technology has made significant changes both in terms of the use of labor, work systems, as well as the use of raw materials(Morrar, Arman, & Mousa, 2017).

Specifically concerning labor, the skills of workers expected in the industrial revolution 4.0 will be different from previous eras. Based on the 2016 World Economic Forum labor skills are expected to include: negotiation, cognitive flexibility, service orientation, decisions and decision making, emotional intelligence, coordinating with others, human resource management, creativity, critical thinking, complex problem solving(Amiron, Latib, & Subari , 2019).Workforce preparation cannot be separated from education, because education is the function of education to prepare students to be ready to face their future. For this reason, the world of education has also improved to meet demands.

In the world of education the term education 4.0 is now known as the impact of the industrial revolution 4.0. The aim of this 4.0 education is to prepare students to be aware of the 4.0 revolution era(Hussin, 2018). Education 4.0 focuses on learning that is more tailored to the needs of students, hyper, intelligent, portable, global and virtual (Shahroom & Hussin, 2018). Three characteristics of education 4.0 are: learning can occur at any time and anywhere, learning that meets the needs of each individual student, and is based on authentic practice (Chea & Huan, 2019). To actualize education 4.0, the most

fundamental challenge today is the readiness of teachers, because in its implementation teachers must master information technology that is sophisticated and more creative and innovative in the implementation of learning(Lawrence, Ching, & Abdullah, 2019).Teachers must be prepared in terms of technical and pedagogical abilities that can help implement digital technology effectively and efficiently (Al-Awidi & Aldhafeeri, 2017; Baharuddin & Dalle, 2019). This means transforming teachers who are mostly digital immigrants to digital native (Shahroom & Hussin, 2018). This transformation is very important because the teacher has a very important role as the main task of a teacher is to educate, teach, guide, direct, train, assess, and evaluate students(Presiden Republik Indonesia, 2007).

To be able to help prepare teachers in facing new challenges in the era of education 4.0, the Subject Teachers' Conference (MGMP) becomes an organization that has a crucial role. This is because the objectives of the MGMP include: (a) Expanding teacher's insights and knowledge in various ways, especially mastering the substance of learning material, preparing syllabus, compiling learning materials, learning strategies, learning methods, maximizing the use of learning facilities/infrastructure, utilizing learning resources; and (b) Increasing teacher competency through activities at the MGMP level(Direktorat Profesi Pendidik, 2008). From these objectives it can be understood that the MGMP must assist teachers in preparing themselves in facing 4.0 revolution by facilitating the development and improvement of teachers' insights and competencies in carrying out education 4.0. Furthermore, the things that need to be prepared by teachers are not only the ability to use digital technology, but also the attitude that is willing to accept digital technology as an important thing in the learning process so that they have the motivation to use digital technology in the learning process(Rohayani, Kurniabudi, & Sharipuddin, 2015).

Rational Research

The Industrial Revolution 4.0 that produced Education 4.0 which demand teachers to be more creative and innovative in implementing learning using the latest information technology. To actualize this, teachers must have adequate understanding and competence both regarding the industrial revolution 4.0 and education 4.0. One way to increase knowledge and competence is through training. Several studies have shown that training is very effective in increasing worker competency. As a result of research conducted by Halawi and Haydar (2018) found that the training conducted by Bonjus Company and Khatib and Alami Company had a positive impact on their competence and performance so as to be able to achieve the expected work targets. Similar research was also carried out by Afroz (2018), who concluded that training has a strong relationship with employee performance. Likewise with research conducted by Motlokoa, Sekantsi, and Monyoloc (2018), their research shows that training not only contributes to performance improvement but also to work motivation of workers. From the results of this research it can be understood that training can be a solution in increasing the understanding and competence of teachers in facing the industrial revolution 4.0.

MGMP as a subject teacher organization plays a role in increasing the insight and competence of teachers. So that this organization should be able to carry out its functions and contribute to the preparation of teachers' understanding and competence in preparing themselves to face the industrial

revolution 4.0. Likewise, the MGMP at Vocational School's Skills in South Kalimantan is expected to be able to carry out its functions in order to improve the understanding and competence of vocational skills teachers in South Kalimantan. So it is considered important to know the efforts and problems faced by the MGMP at Vocational School's Skills in South Kalimantan in carrying out its functions in welcoming the 4.0 revolution.

Research Benefits

This study will provide an overview of the conditions of the MGMP at Vocational School's Skills in South Kalimantan in the scope of the efforts and problems faced in facing the industrial revolution 4.0. With the availability of an authentic and comprehensive picture, it is hoped that later the results of this study can be used as a basis for determining the next policy of the relevant parties regarding the MGMP at Vocational School's Skills in Kalimantan Selatan.

Problem Formulation

The problem which is trying to be solved in this research is:

1) How is the Subject Teachers MGMP Efforts in Learning Skills Facing the Era of Industrial Revolution 4.0?
2) What are problems faced by MGMP Skills Subjects at Vocational School in South Kalimantan in Facing the Era of Industrial Revolution 4.0?

Research Objectives

Based on the problem formulation above, the purposes of this study are:

1) Identify the efforts that have been made by the MGMP at Vocational School's Skills in South Kalimantan in facing the industrial revolution era 4.0.
2) Identifying the problems faced by the MGMP at Vocational School's Skills inSouth Kalimantan in facing the industrial revolution era 4.0.

METHOD

Research Design

This research is a qualitative study by following the interpretative research model. The selection of interpretation research models is based on research objectives which only focus on describing the experiences ofmembersof MGMP Vocational School's Skills in South Kalimantan regarding the efforts and problems in MGMP in dealing with the industrial revolution 4.0. So for that purpose, the interpretation research model is most appropriate because it only focuses on describing the experiences felt by the people involved in the activity (Ary, Jacobs, & Sorensen, 2010).

Respondents

Respondents involved in this study were 17 teachers of MGMP Vocational School's Skills teachers who teach at State Vocational Schools in South Kalimantan. The State Vocational Schools are SMKN 5 Banjarmasin, SMKN Banjarbaru 1, SMKN 1 Martapura, SMKN 1 Pelaihari, and SMKN 1 Rantau.

The selection of respondents is based on the needs of researchers or with purposive sampling techniques in the form of homogenous samples or samples that have similarities(Fraenkel, Wallen, & Hyun, 2012). The similarity of the sample is that they are members of theMGMP Vocational Scholl's Skills who teach at State Vocational Schools in South Kalimantan.

Research Instruments

To collect data on the efforts and problems faced by the MGMP Vocational School's Skills in South Kalimantan in the face of the industrial revolution 4.0 researchers used a checklist, interview guides, and documentation documentation. Check lists and interview guides were developed using the theory of the industrial revolution 4.0 and education 4.0 which are linked to the MGMP function.

Data and Data Sources

The data collected in this study is in the form of the opinion of MGMP Skills of Vocational Schools in South Kalimantan regarding efforts and problems in facing the industrial revolution 4.0. In addition, the data in this study are also in the form of activity documents carried out by the MGMP Skills of Vocational Schools in South Kalimantan, as well as other documents that show the problems faced by the MGMP Skills of Vocational Schools in South Kalimantan. All data needed in this study was sourced from the MGMP Skills of Vocational Schools members in South Kalimantan who were the sample of this study.

Data Collection

The data in this study were collected using three different techniques and at different times, namely the distribution of check lists, interviews, and content analysis. However, the three data collection techniques have the same function to collect data on MGMP efforts and problems in the face of the industrial revolution 4.0. For the first stage of data collection, researchers distributed check lists to all respondents. After about a week the respondents filled out the check list, the researcher conducted the second phase of data collection by interviewing the respondents and matching the data from the results of the checklist with the results of the interview. After that, researchers also collect documents to ensure that the data obtained by researchers through check lists and interviews are the same as the data in the documents. The implementation of the three data collection techniques is intended to ensure that the data obtained can be trusted. In other words, the researcher ensures the validity and reliability of the data through data triangulation with triangulation technique.

Data Analysis Techniques

Data obtained from the results of the check list, interviews, and content analyses were analyzed using interactive data analysis techniques. This analysis technique includes three stages, which are data reduction, data display and drawing conclusions (Miles, Huberman, & Saldana, 2014).

RESULT

Efforts in Facing Industrial Revolution 4.0

Based on data collected from the results of the distribution of check lists, it was found that MGMP vocational school's skills in South Kalimantan had carried out their functions as a forum for improvement. This can be seen from the implementation of several activities related to improving pedagogical competence. Specificially the activities that become routine activities of vocational vocational school skills in South Kalimantan are the preparation of learning implementation plans, and questions for semester exams. While other incidental activities carried out relate to the preparation of learning materials, strategies of learning, learning methods.

The finding was confirmed based on data obtained from interviews that also showed a similar thing, namely the activities carried out by MGMP vocational school's skills in South Kalimantan were indeed centered in terms of improving pedagogical competence and indirectly on professional competence. Based on data obtained from check lists, interviews, and content analysis, no specific activities were found that aim to develop social competence and personality. The activities carried out by MGMP vocational school's skills in South Kalimantan, based on data from documents that have been collected, can be seen in Table 4.1 below.

Table 1. Activities have been carried out by MGMP Vocational School Skills in South Kalimantan in 2011-2020

No	Year	Activity	Nature of Routine/Incidental Activities
1	2011	Preparation of lesson plans and Creat exam questions	Routine
2	2012	Teacher Training Classroom Action Research Training	Incedentil
3	2013	Development of lesson plans and Media Making	Routine
4	2014-2015	Preparation of lesson plans and Exam& Test Questions	Routine
5	2016-2017	Preparation of lesson plans and training on learning strategies	Routine and Incedentil
6	2017-2018	Preparation of lesson plans and Comparative Study	Routine and Incedentil
7	2019-2020	Classroom Action Research Training and Learning Media Compilation	Incedentil

If related to efforts to deal with the industrial revolution 4.0, then the efforts made are still limited to the understanding of the internet on things (IoT) that can be seen from the activities of developing information technology-based learning media. However, when viewed from the perspective of education 4.0, the activities carried out by MGMP vocational school skills in South Kalimantan have led to the focus of education 4.0 in terms of learning that is more tailored to student needs and portable learning, whereas from the perspective of educational characteristics 4.0, the activities carried out by MGMP vocational school skills in South Kalimantan have met the characteristics of learning can happen anytime and anywhere.

Problems in Facing the Industrial Revolution 4.0

Based on data obtained from check lists, interviews, and content analysis it was found that there were several problems faced by MGMP vocational school skills in South Kalimantan both institutionally and personally in the face of the 4.0 revolution. These problems include:

a. Human Resources Readiness

The problem most frequently raised by respondents regarding the challenges facing the industrial revolution 4.0 is the unpreparedness of MGMP members in vocational school skills in South Kalimantan. This unpreparedness can be seen from the number of respondents who stated that they did not understand all four pillars of the industrial revolution 4.0. Most of them only know the internet of things and even then it is still limited to the use of the internet to find teaching materials. Whereas for the other three pillars of the industrial revolution, namely cyber- physical systems, internet of service (IoS), and smart factories, only a small number of MGMP skills of vocational school skills teachers in South Kalimantan are known. From the explanation given by respondents who stated knowing the three pillars of industry 4.0, it can be understood that they only knew the definition without being able to implement their knowledge of the three principles in the learning process.

Likewise with the implementation of education 4.0 which is a manifestation of the industrial revolution 4.0 in the world of education, most MGMP members of vocational school skills in South Kalimantan said they were still not ready and had difficulty in implementing it. From the interviews and documents collected it was found that only a small proportion of teachers have implemented the learning by utilizing information and communication technology that enables learning to occur anywhere and at any time. Most teachers interviewed stated that they still had problems in developing e-learning based learning media because they recognized that their competence in the field of information technology was still low.

b. Availability of Infrastructure and Facilities

Industry 4.0 must be supported by the availability of facilities and infrastructure that support the occurrence of an industry that utilizes sophisticated information technology that not only to automate production but also significantly increases the amount of production more effectively and efficiently. Likewise with education 4.0 also required facilities and infrastructure in the form of sophisticated and reliable information technology. Based on the results of interviews conducted, it was found that almost all respondents stated that both the MGMP as an organization and the personal teachers who were members still had problems in providing supporting facilities and infrastructure to realize the demands of the industrial revolution 4.0 and education 4.0. Based on the results of data collection through content analysis and interviews regarding the facilities and infrastructure owned by MGMP, it was found that MGMP of South Kalimantan Vocational Skills did not have the facilities and infrastructure in the form of information technology devices that could be used by members to face the era of the industrial revolution 4.0 and education 4.0.

Although most of the teachers stated that they already have smartphones and laptops as a means to carry out education 4.0, they are still constrained by the internet network because most of their schools in the internet network cannot function properly. Neither the facilities owned by students, although students have smartphones, but many schools do not allow students to bring smartphones to school. So to implement information technology -based learning, students must utilize the lab. Computers, while the existence of computer laboratories is still limited and if there are any, internet network problems. Furthermore, if you expect students to bring personal laptops it is still a problem because not all of the rest have laptops. However, when viewed from the capability side, most students in this era are ready to implement learning using digital technology (Blayone, et al., 2018).

c. Availability of Funds

The use of information technology devices certainly requires extra costs. From the results of the MGMP interview the Skills of the South Kalimantan Vocational School did not have a lot of funds to carry out activities that could support the readiness of MGMP members to face the challenges of the industrial revolution 4.0. In addition MGMP also does not have the funds for the purchase or maintenance of facilities and infrastructure needed to meet the demands of the industrial revolution 4.0 and education 4.0. owned by MGMP are very limited, so they are prioritized for the implementation of routine activities such as meetings for the preparation of semester exam questions. Even based on the results of interviews and MGMP content analysis skills never get operational funds so to carry out an activity is difficult to carry out.

d. Time Availability

Based on the results of the interview and content analysis, the MGMP of skills at the South Kalimantan Province Vocational School scheduled its activities every Saturday, but in reality there were still teachers who could not attend because of school hours. Teachers who do not attend MGMP meeting can find out the results of the MGMP meeting from other skills teachers. MGMP Skills activities in Vocational School in South Kalimantan Province since 2003 have been quite active until 2008, in the last ten years experiencing problems so they rarely hold regular MGMP meetings. This is due to various factors, in addition to funding problems, teachers are increasingly busy because they have to meet 24 hours of learning every week so the meetings are sometimes not on the agenda and are not well scheduled.

DISCUSSION

Efforts in Facing Industrial Revolution 4.0

Based on the results of the research that has been submitted, the efforts made are still limited to improving the pedagogical competence of teachers, especially the part to increase understanding of the internet of things (IoT). The role of IoT is indeed very important in the industrial revolution 4.0, because IoT is able to connect various information systems with users anytime and anywhere making it easier for users to carry out various activities so as to increase productivity (Lampropoulos, Siakas, & Anastasiadis, 2019). The application of IoT in the industrial world in addition to being able to increase the amount of production is also able to increase efficiency, which results in increased competitiveness of

products or businesses (Nagy, Oláh, Erdei, Máté, & Popp, 2018). Furthermore, by increasing the amount of production and decreasing production costs, the implementation of IoT can increase the profits of a company (Rojko, 2017). The important role of IoT in the industry makes IoT one of the principles of the industrial revolution 4.0.

If related to the educational context, the implementation of IoT will help teachers implement learning from time and time. Learning anywhere and anytime is often referred to as mobile learning, namely learning that is done by utilizing mobile devices and the internet (Darmaji, Astalini, Lumbantoruan, & Samosir, 2019). MGMP Skills of Vocational School in South Kalimantan have conducted training in the field of learning media development that leads to the concept of mobile learning. So from an educational point of view 4.0 efforts that have been made by MGMP Skills of Vocational Schoolin South Kalimantan have included fulfilling one of the focuses and characteristics of education 4.0.

However, to meet the demands of the industrial revolution 4.0, understanding and implementing IoT is not enough. There are various other things that must be prepared, one of which is competence in the 4.0 revolution era. Education has a very important role in shaping these skills and that means the teacher has the responsibility to realize these competencies in their students. Education must be able to produce graduates who are able to compete in the world of work, if the demands of the world of work change then education must be able to change to meet the integrity of the world of work. So, in this 4.0 industrial revolution era, education must be able to create graduates who have the competencies needed in this era (Fomunyam, 2019).

However, to realize education in accordance with the demands of the industrial revolution 4.0 the involvement of the government and the industry is very necessary, in other words educational institutions, government, and industry must work together (Linh, 2019).

Competencies needed in the industrial revolution era 4.0 consist of: negotiation, cognitive flexibility, service orientation, decisions and decision making, emotional intelligence, coordinating with others, human resource management, creativity, critical thinking, complex problem solving (Amiron, Latib, & Subari , 2019). The ability to negotiate must also be supported by our ability to communicate in international languages, which is English. In the industrial era 4.0 which has no limit on distance and time, English language skills are a necessity because now we automatically become global citizens or citizens of the world so we must master the international language (Azmi, Kamin, Noordin, & Nasir, 2018). Even in the era of the industrial revolution 4.0 the ability to communicate in English became one of the important indicators in determining the acceptance of a worker in a position in the company(Shuhaimi & Awaludin, 2018).Furthermore, when viewed from a broader perspective, the skills students must have in the industrial revolutionera 4.0 are composed of technical skills in the form of digital capabilities, and non-technical skills in the form of problem solving, communication, and leadership (Ahmad, Segaran, Soon, Sapry, & Omar, 2019).

Problems Facing in Industrial Revolution 4.0

From the results of the research described earlier, four problems were identified by the South Kalimantan Vocational School Skills MGMP, which are: readiness of human resources, availability of facilities and infrastructure, financial support, and time constraints. The following is a discussion of each of these problems.

a. Human Resources Readiness

The first problem experienced by the MGMP Skills of Vocational School in South Kalimantan is the readiness of human resources. This readiness includes the readiness of teachers in terms of the knowledge they have about revolution 4.0. Even though they have received training, most of the teachers interviewed stated that they still had problems in developing e- learning based learning media because they recognized that their competence in the field of information technology was still low. What usually becomes a problem for teachers are the technical problems that arise when they use information technology to teach (Alakrash & Razak, 2018).

In addition, the unpreparedness of teachers is usually also influenced by a lack of knowledge about the latest technologies due to lack of training on the application of these technologies (Rameli, Azlina, Yahaya, & Kamin, 2018). The ability of teachers is still low due to the majority of teachers being digital immigrants who currently must be transformed into digital native(Shahroom & Hussin, 2018).In addition to the ability to use digital technology, an attitude that is willing to accept digital technology as important in the learning process so that they have the motivation to use digital technology in the learning process is very important for every teacher (Rohayani, Kurniabudi, & Sharipuddin, 2015).

Teaching habits of teachers who do not use technology also affect the readiness of teachers, teachers who are accustomed to not using technology and feel comfortable with these conditions are usually more unprepared in implementing learning by using technology according to the demands of the industrial revolution 4.0(Olena, Natalia, Oksana, & Natalia, 2019). Another problem is the amount of software and hardware that was not actually created specifically to carry out learning in the classroom is now used in the classroom, so teachers who have less digital skills will find it difficult to follow(Engen, 2019). Even today there are still many schools that have not been able to meet the demands of the industrial revolution 4.0 because there is a difference between the skills they get at school and the demands in the industrial world that have implemented the revolution4.0 (Dumitrescu, Lima, Chattinnawat, & Savu, 2019).

b. Availability of Infrastructure and Facilities

To carry out education in accordance with the demands of the industrial revolution 4.0 required supporting infrastructure and facilities in the form of adequate amounts of information technology and adequate internet networks. However, in reality MGMP Skills of Vocational School in South Kalimantan do not have the facilities and infrastructure; the teachers also find it difficult to obtain adequate supporting facilities, especially in terms of the availability of

computers and internet networks. The existence of software, hardware and internet networks is an absolute requirement in Industry 4.0, because IoT can be implemented if all the support is available (Liaoa, Louresa, Deschampsa, Brezinskia, & Venâncio, 2018). For this reason, it can be said that the implementation of the industrial revolution 4.0 requires investment in the form of adequate infrastructure and facilities (Bondar, 2018). To carry out learning anytime and anywhere or mobile learning, which is one of the characteristics of education 4.0, then there are at least three things that must be prepared are teacher competency, student competence, and supporting facilities for implementing mobile learning including information technology devices and internet networks (Martins & Gouveia, 2018).The availability of a strong internet network, a reliable Learning Management System, and technical problems are some of the problems that are often faced in implementing digital technology in learning (Sriwichai, 2020).

c. Fund Support

The use of information technology devices certainly requires extra costs. From the results of the MGMP Skills interview of the South Kalimantan Vocational School did not have a lot of funds to carry out activities that could support the readiness of MGMP members to face the challenges of the industrial revolution 4.0. In addition MGMP also does not have funds for the purchase or maintenance of facilities and infrastructures needed to meet the demands of the industrial revolution 4.0 and education 4.0. Even based on the results of interviews and MGMP content analysis skills never get operational funds so to carry out an activity is difficult to carry out. So, from the data it can be understood that in terms of funding it is not possible for MGMP Skills interview of the South Kalimantan Vocational School to be able to meet the demands of the industrial revolution 4.0. Innovation in the world of education always starts from the top down (top down) for that the government has a very important role in realizing these educational innovations (Serdyukov, 2017). The government is not only required to provide a curriculum that is in line with the demands of the business community, but also provides funding to implement the curriculum (Benešová & Tupa, 2017).

Implementation of education 4.0 as a result of the 4.0 revolution does require commitment from all stakeholders and requires a large amount of funding (Salmon, 2019). That is because education 4.0 requires educational facilities that enable the use of advanced technology such as IoT, robotics, digitalization, automation, and teleconference (Pangandaman, Ali, Lambayong, & Ergas, 2019). Although, it requires a large amount of funds the implementation of education 4.0 is feasible, because it is able to make the teaching and learning process more enjoyable and increase student motivation (Ghareb & Ahmed, 2018).

d. Limited time

From the results of this study, it was found that the last problem that often becomes an obstacle for MGMP Skills of vocational school in South Kalimantan in facing the demands of the industrial revolution 4.0 is time constraints. This problem arises due to the workload of teachers and the schedule of activities in MGMP which often clashes with the teaching activities

of teachers. To realize education 4.0 time investment is indeed needed because there are many things that must be done. To work on e-learning based learning media, for example, teachers must provide special time to develop it because the development of instructional media requires creativity and innovation (Ahmar & Rahman, 2017). Moreover if the teacher designs learning with the blended learning approach the teacher and students are likely to experience problems managing time for face-to-face learning activities and e-learning (Sriwichai, 2020).

Although planning and preparation for education 4.0 requires a lot of time, it is mandatory for teachers to prepare their students for their future in the era of the industrial revolution 4.0(Sharma, 2019). Moreover, the implementation of learning using digital technology has been proven to be able to contribute positively to students' abilities. As a mobile learning implementation that is proven to be able to improve students' English communication skills (Klimova, 2019). The implementation of digital technology in the form of e-learning is also able to increase student activity in the teaching and learning process (Qureshi, Schaeffer, & Zareen, 2019). Similarly, in increasing student motivation, the implementation of mobile learning is also able to increase student motivation (Uther, 2019).In addition, although it will spend a lot of time in planning, but the implementation of e-learning can help students and teachers to have more time to communicate because communication can be done anytime and anywhere (Elkhateeb, Shehab, & El-bakry, 2019).

RECOMMENDATION

There are several recommendations that can be submitted from the results of this study. First, MGMP Skills of Vocational School in South Kalimantan need to carry out more varied activities mainly in the form of training to prepare teachers to face the industrial revolution 4.0 and be able to carry out education 4.0. Second, to be able to carry out these activities, operational funds are certainly needed, so it is hoped that there will be MGMP collaboration with other stakeholders in pursuing activity funding. Third, in addition to training activities, MGMP also needs to be given assistance in the form of supporting facilities for learning 4.0. Thus, the challenges of the industrial revolution 4.0 will be faced by the MGMP Skills of Vocational School in South Kalimantan.

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Instruments

CHECK LIST

Name :_____

Institution :_____

Duration :_____

Aspect	No	Activities related to …	Note	
			Yes	No
The Function of MGMP	**1.**	**Pedagogic competency improvement:**		
		a. Syllabus Compilation		
		b. Preparation of learning materials		
		c. Mastery of the substance of learning material		
		d. Learning strategies		
		e. Learning methods		
		f. Maximizing the use of learning facilities/infrastructure		
		g. Functioning learning resources		
		h. Implementation of the assessment		
		i. Students Understanding		
		j. Development of students to actualize the various potentials they have		
	2.	**Increased on professional competence:**		
		a. Mastery of subject matter widely and in depth in accordance with the standards of the contents of the education unit program, subjects, and/or groups of subjects to be taught;		
		b. Mastery of concepts and methods of scientific discipline, technology, or relevant arts, which are conceptually overshadowing or coherent with the program of educational units, subjects, and/or groups of subjects to be taught.		
	3.	**Increased social competence, including:**		
		a. communicate verbally, write and/or gesture politely;		
		b. using communication and information technology functionally;		
		c. associate effectively with students,		
		fellow educators, education personnel, leaders of educational units, parents or guardians of students;		

		d. socialize politely with the surrounding community by respecting the norms and the prevailing value system; and		
		e. Applying the principle of true brotherhood and a spirit of togetherness.		
	4.	**Increasing personality competence:**		
		a. Increased faith and piety;		
		b. Increasing noble character;		
		c. Increased knowledge and wisdom;		
		d. Increasing democratic understanding;		
		e. Increased dignity;		
		f. Increased stability;		
		g. Increased maturity;		
		h. Increased honesty;		
		i. Increase sportsmanship;		
		j. Improving role models for students and the community;		
		k. Increased ability to evaluate one's own performance;		
		l. Self-development independently and continuously		
Industry 4.0	**5.**	**Understanding or mastering the four industrial4.0 pillars:**		
		a. *cyber- physical system*		
		*b. internet of things (*IoT),		
		c. i*nternet of services* (IoS)		
		d. *smart factory*		
	6.	**Competence in the Industrial revolution era 4.0:**		
		a. negotiation,		
		b. cognitive flexibility		
		c. service orientation		
		d. Decree and decision making		
		e. emotional intelligence,		
		f. human Resource Management,		
		g. coordinate with others,		
		h. creativity,		
		i. critical thinking,		
		j. complex problem solving		
Education 4.0	**7.**	**Focus Education 4.0:**		
		a. Learning that is more tailored to the		
		needs of students,		
		b. Hyper learning		
		c. Smart learning,		
		d. Portable learning, and		
		e. Worldwide learning		
		f. Virtual learning		
	8.	**Educational Characteristics 4.0:**		

		a. learning can happen anytime and anywhere,		
		b. learning that that meets the needs of each individual student,		
		c. learning based on authentic practice		

INTERVIEW GUIDELINE

Name :_____

Institution :_____

Duration :_____

1. What activities are usually carried out by Skills MGMP of Vocational Schools in South Kalimantan from 2011-2020? Are there proof documents of implementation?
2. When viewed from the purpose of which activities aimed at:
   a. Improve teacher pedagogical competence?
   b. Improve professional competence?
   c. Improve social competence?
   d. Improve personality competence?
3. Are there activities carried out to study cyber-physical systems?
4. Are there activities carried out to learn about IoT?
5. Are there activities carried out to learn about IoS?
6. Are there activities carried out to study smart factori?
7. Are there activities carried out to practice negotiation/communication skills?
8. Are there activities carried out to practice cognitive flexibility?
9. Are there activities carried out to practice understanding service orientation?
10. Are there activities carried out to practice decision making skills?
11. Are there activities carried out to train emotional intelligence?
12. Are there activities carried out to train human resource management skills?
13. Are there activities carried out to practice the ability to coordinate with others?
14. Are there activities carried out to train creativity?
15. Are there activities carried out to practice critical thinking skills?
16. Are there activities carried out to practice complex problem solving skills?
17. Are there activities carried out to carry out learning that are more tailored to student needs?
18. Are there activities undertake to carry out hyper learning?
19. Are there activities undertaketo carry out intelligent learning?
20. Are there activities undertaketo carry out portable learning?
21. Are there activities undertaketo carry out global learning?
22. Are there activities undertaketo carry out virtual learning?
23. Are there activities undertaketo carry out learning that can occur at any time and anywhere?
24. Are there activities undertaketo carry out learning that can meet the needs of each individual student?
25. Are there activities undertaketo carry out learning based on authentic practices?