

# Academic Supervision to Improve Teachers' Readiness in Utilizing Information and Communication Technology in Vocational High Schools

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Received April 6, 2020; Revised June 11, 2020; Accepted June 16, 2020

## Cite This Paper in the following Citation Styles

(a): [1] Erlina Istiningsih, Suyatno, Widodo, "Academic Supervision to Improve Teachers' Readiness in Utilizing Information and Communication Technology in Vocational High Schools," *Universal Journal of Educational Research*, Vol. 8, No. 10, pp. 4365-4373, 2020. DOI: 10.13189/ujer.2020.081002.

(b): Erlina Istiningsih, Suyatno, Widodo (2020). *Academic Supervision to Improve Teachers' Readiness in Utilizing Information and Communication Technology in Vocational High Schools*. *Universal Journal of Educational Research*, 8(10), 4365-4373. DOI: 10.13189/ujer.2020.081002.

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**Abstract** The study aims to explain the implementation of academic supervision to improve teachers' readiness in utilizing information and communication technology. The implementation includes several aspects, such as planning, implementation, and evaluation of academic supervision. The research is a qualitative type with a case study approach. The subjects are the headmaster and teachers in SMK Muhammadiyah Karangmojo. The data were gathered through observation, interview, and documentation. They were then analyzed by reducing, displaying, and drawing a conclusion. The research has three findings. First, the supervision program is arranged by the headmasters, consisting of the supervision instruments emphasizing the use of digital learning media by the teachers. Second, the teachers have utilized various and attractive digital communication media, allowing the students to be more active and creative during the learning process. In implementing the program, the main obstacle encountered by the headmasters is related to the teachers, in that the senior teachers are reluctant to learn to use information and communication technology. Besides, a low internet connection becomes another impediment that occurs if the school members use it at the same time. Third, the evaluation and follow-up were carried out by facilitating the teacher forum (MGMP) at school and sending the teachers to follow the training and education program to increase the literacy in information and communication technology. The findings prove that the supports of the headmaster as the top leader

through academic supervision help teachers improve their readiness in utilizing the technology in the classroom.

**Keywords** Academic Supervision, Information and Communication Technology, Vocational High School

## 1. Introduction

Education is a process of nurturing learners to develop their emotions and cognition, as well as their functions and roles in society. Quality education can realize quality human resources and the progress of a nation (Gardon, 2004). It is in line with Suharsimi (2003: 24), stating that the attempts to improve the quality of education is expected to improve the honor and dignity of Indonesian people. Mulyasa (2005: 24) suggests that human resources need to be developed in the context of the regional economy and educational decentralization. For the effectiveness of the implementation of education in schools, it is necessary to arrange a development program. One of which is through academic supervision, assumed as the development services for the teachers to increase and improve the education, allowing them to teach properly and improve the students' learning outcome (Fahmi, Murniati, Nurliza, & Usman, 2018). Hussain (2018) states that superior quality human resources will be produced from teachers who are able to master super-fast technology. Therefore, to answer the challenges in the era of information

technology-based education and teacher communication not only change teaching methods but must be able to improve and adjust competence, quality and professionalism. According to Lubis (2019) teachers have more tasks than just teaching, but also managing students, the important role of teachers in advancing education, because teachers interact directly with students in learning. Burritt and Crist (2016) suggest that teachers as leaders in learning are required to be able to adapt and be ready to change, in facing challenges in the era of information and communication technology.

Previous studies about the academic supervision of a headmaster have already been conducted; one of them was by Suryani (2015). She studied the implementation of academic supervision in improving the learning process. She revealed that supervision is one form of monitoring and controlling activity to prevent teachers from getting out of the track as well as encouraging them to accomplish the task more carefully. Another study was conducted by Leniwati and Arafat (2017), finding that a headmaster's academic supervision can improve the teachers' performance. Also, they concluded that supervision can help teachers to overcome their teaching difficulties. Meanwhile, according to Yeeratee (2018), academic supervision is the support provided to create a better learning environment. The success of learning highly depends on the supervision of the headmaster. In addition, Zulham (2018) proposes that the academic supervision by the headmaster begins by planning the supervision program through observing the obstacles encountered by the teachers. After that, the headmaster in coordination with the supervisor develops an instrument to help teachers at school.

By reviewing the previous studies, it can be concluded that none of them emphasized academic supervision to improve the teachers' readiness in utilizing information and communication technology. Therefore, revealing the teachers' readiness in the aforementioned topic will be the objective of the present study.

The present study is necessary to conduct because of the high demand for education to adjust to the challenges of the Industrial Revolution 4.0, where everything is digital-based. Thus, teachers are required to make some innovations in the utilization of information and communication technology, with the hope that the implementation of academic supervision can be as a development of teaching and school success to provide student success, especially also for students who at home do not have information and communication technology facilities to support their learning process.

## 2. Literature Review

### Information and Communication Technology in Learning

The advance of information and communication

technology has changed several aspects of life, these changes occur in the way of communication, how to express themselves, how to market trade products and even major changes occur in the field of education (Winarso, et al; 2017). Consequently, the teaching and learning process at school is required to follow the advance of technology. Ismiyati in Siafirah and Bakti (2015) showed that the quality of learning is a condition depicting the effectiveness level of a learning process facilitating the learners to interact with various learning sources. In so doing, they can get effective, efficient, and attractive learning. With the fact that the students tend to be closer to information technology, Sudarman (2010) showed that information and communication technology have two roles. First, it is a medium to present the learning materials, such as in the form of PowerPoint slides and animation using adobe flash. Second, it serves as autonomous learning media or e-learning. Thus students can be given the task to read, find learning resources by utilizing information and communication technology. It encourages learners to explore knowledge independently.

In short, in the learning process, the teacher's role can improve the learners' participation through effective interaction in the classroom. It can be carried out by utilizing appropriate information and communication technology. According to Dantes (2017), the behavior of a teacher as a professional worker in general should reflect one of them is adaptability, that is, the professional teacher in carrying out their duties will always make situational and conditional technical adjustments according to the demands of the situation and conditions, while still being oriented towards achieving the desired results. Kagermann in Lubis (2019) explained that deep process current teaching and learning activities utilizing digital technology, teacher competence too must be upgraded to follow information development flow and technology.

### The Advantage of Information and Communication Technology in Learning

The use of information and communication technology in learning activities is unavoidable. As a result, the school needs to provide the facilities to support the implementation. According to Budiana et al. (2015), utilizing information and communication technology have several advantages; those are improving the quality of learning, increasing the access to teaching and learning process, helping to visualize the abstract concept, allowing the students to understand the materials, presenting the materials more attractively, and allowing the interaction between the learners and the materials.

The rapid flow of information has created other kinds of learning resources for the students, in that the teachers are no longer the only source of learning. It is in line with the study carried out by Almeida (2019), in the era of information and communication technology, to fulfill its function in transferring knowledge, teachers must have qualified, competent and qualified qualifications. Teachers

need to carry out learning with fun, interesting, creative, friendly, and flexible (Leen et al., 2014). They should be convinced that information and communication technology are fruitful in facilitating the students' learning process. Besides, their roles will never be replaced by technology. Instead, technology assists a teacher in preparing and implementing the learning process. Therefore, teachers should be involved in developing the information and communication technology for the sake of the students' success.

### **The Importance of the Teachers' Readiness in Facing the Development of Information and Communication Technology-Based Education**

Education is expected to prepare a strong generation amidst the competition in the era of information and technology information. They should be responsive, adaptive, and reliable. Fitriah and Miranda (2019) state that teachers need to prepare themselves to use the technology to maximize their capability in assisting the students to achieve the goals. In addition, Nopilida and Kristiawan (2018) argue that the challenge of the industry 4.0 is ability to use technology, have literacy abilities, critical thinking, problem-solving, communication, collaboration, and good characters.

Based on the above description can be concluded that teachers should prepare themselves to help the students by applying various learning methods that have been adjusted to the stage of the child's development. It allows the children to be more creative in solving their problems through literacy and numeracy skills, as well as collaborating with their peers and thinking critically.

### **Academic Supervision to Improve Teachers' Readiness to Utilize Information and Communication Technology**

Supervision is a process designed to help teachers learn everyday tasks at school so they can use their knowledge and abilities to provide better services to students, parents and schools, and strive to make schools a more effective learning community (Mulyasa, 2013). Meanwhile, academic supervision is a process of stimulating growth and ways of assisting teachers in improving teaching in order to help students achieve predetermined learning goals (Paulsen et al., 2014).

To conclude, supervision means an aid provided for teachers to improve the learning process, to achieve the education goals. It can be carried out by improving the quality of the teaching process. This way, it will create a comfortable learning condition.

One of the goals of supervision is to help teachers improve their competence. Supervision is important to do so that they can control the quality and learning activities in schools. So by carrying out supervision, teacher competence is expected to increase and ultimately the quality of learning can be improved (Setyorini & Kirman, 2020). The teacher's academic supervision must be able to create a conducive, capable learning situation to

manage classes, and master subject matter (Rahabav, 2016).

Therefore, supervision is not only to improve the teachers' quality in teaching but also to provide assistance for the teachers' professionalism. In particular, teachers' quality includes knowledge and skill necessary for the teaching evaluation and method.

The main function of supervision is to guide the teachers to improve the teaching and learning conditions (Brown, 1960). In general, supervision serves to help others to be effective and efficient. A supervisor also plays several roles in the school system. A supervisor serves as an instructional leader, assesses the students' progress, as well as making sure that teachers prepare and maintain accurate and adequate students' progress (Sutoyo, 2017).

Therefore, it can be concluded that a supervisor needs to organize all the attempts done in the school environment, including the teachers' efforts to actualize themselves during the learning process as well as in the efforts to develop the schools' activities (Nolan & Hower, 2011).

A teacher is one of the influencing factors affecting the quality of education. As one of the students' learning resources, teachers need to have the competence to show their professional capabilities in accomplishing their tasks (Naser & Masek, 2015). The advance of science and technology requires teachers to improve their skills. Unawareness of the rapid changes in the surroundings may hamper their self-development (McNally & Possow, 1959). Relating to the idea, Adler (1982) recommended teachers manifest their skills in the process of long-life learning as a teacher. Teachers' low quality has been a recent issue in education (De Roche & Edward, 1985).

Therefore, supervision for teachers is necessary to renew their skills. The continuous supervision is conceptually recommended and empirically proven as highly necessary (Al-Naggar et al., 2012). In particular, academic supervision helps teachers at school in utilizing the learning media to obtain the best results. It is expected that the use of technology will improve students' learning outcomes.

## **3. Research Methods**

### **Type of Research**

The research is a qualitative type with a case study approach. The study aims to reveal the implementation of academic supervision to improve teachers' readiness in utilizing information and communication technology in SMK Muhammadiyah Karangmojo, Gunungkidul, Yogyakarta Special Region, Indonesia.

### **Participants**

The participants are the headmaster and the teachers of SMK Muhammadiyah Karangmojo, Gunungkidul, Yogyakarta Special Region. The demography of the subjects can be seen in table 1.

**Table 1.** Demography of the Subjects

Name (initial)	Position	Gender	Age	Education	Teaching experience
Mnw	Headmaster	Male	31 years	Bachelor	8 years
Ade	Curriculum Division	Female	34 years	Bachelor	10 years
Wld	Teacher	Female	36 years	Bachelor	12 years
Ank	Teacher	Female	35 years	Bachelor	9 years
Hrt	Teacher	Male	58 years	Bachelor	30 years
Fep	Teacher	Female	34 years	Bachelor	6 years
Da	Teacher	Female	29 years	Bachelor	2 years
Dan	Teacher	Female	32 years	Bachelor	9 years
Ep	Teacher	Male	30 years	Bachelor	5 years
Ib	Teacher	Female	36 years	Bachelor	12 years

### Data Collecting and Analyzing Technique

The data were collected through observation, interviews, and documentation. In gathering the data, the researcher used data collecting guidelines developed based on several theories. Besides, the guidelines have been validated through an expert judgment and are proven as appropriate to use.

The data were analyzed using a qualitative data analysis technique. The interviews were made into a transcript, which was read repeatedly to help the researcher understand the phenomena under study (Creswell, 2008, 2013; Liamputtong, 2009; Yin, 2011). The collected data were presented in a narrative text. In explaining the findings, some parts of the interview transcript were included as the sample of illustration (Fine et al, 2000; Simons, 2009).

## 4. Findings

The data of the research is presented to meet the research objectives and research questions. The relevant interview transcripts were given to support the findings.

### Planning Academic Supervision

Planning is the first management function carried out by a leader. Good planning will help a school headmaster implementing the management. In the location under study, the academic supervision planning to prepare the teachers to utilize information and communication technology is carried out at the beginning of the school year. The programs were carried out together by the human resources in the school. The instrument is prepared to help teachers achieve the required competence. It was revealed from the interview with the MNW, the school headmaster:

I arrange the academic supervision program at the beginning of the school year. It is to identify the teachers' competence in classroom management, including planning, implementation, and evaluation. I

planned the program with the curriculum division and the representatives of senior teachers. The instrument of the academic supervision is based on the guidelines from the supervisor. It encourages the teachers to utilize various technologies, such as digital devices and classroom Edmodo, in the learning process. To support the teachers, the school has provided training on the use of information and information technology (January, 31, 2020).

A similar statement was given by ADE, the vice headmaster in charge of the curriculum:

I and the senior teachers help the headmaster to arrange the academic supervision for the teachers at the beginning of the year. The instrument mentions the recommendation to utilize technology and the relevant learning resources, such as multimedia devices, Edmodo, and others to attract the student (January, 24, 2020).

In short, the academic supervision is arranged once a year by the headmaster together with the curriculum division and the senior teachers. To attract the students, the instrument emphasized on the use of various media in the learning process.

### The Implementation of Academic Supervision

HRT, a senior teacher states that:

In practice, 90% of teachers have used Edmodo provided by the school. The classroom condition is different from when they did not use any technology; the students are more enthusiastic to learn. The use of information and communication technology facilitates the interaction between the teachers and the students. Besides, teachers can create the teaching materials in the form of PDF and post them via Edmodo, enabling the students to read the materials at any time (January, 17, 2020).

In line with the statement, FEP, a marketing teacher and

also the Head of Online Business and Marketing Competencies, claims that:

The teachers have used technology in the classroom, such as Edmodo. Besides, they also use LCD and projector to show a video and the PowerPoint slides of the materials. The utilization gives a positive impact on the classroom condition, in that students are more active because they are exposed to audiovisual media and games for education through Kahoot application. Besides, the activities encourage them to find a solution to the problems they encountered in the learning process (January, 17, 2020).

Thus, it can be said that the teachers are ready to teach using information and communication technology. Among the many are social media, Edmodo, flash, and Kahoot. Almost all of the teachers use the Internet in the learning process; the students are allowed to browse the materials, encouraging them to be more active. Not only do they use PowerPoint slides, but also LCD and projector to attract the students' attention.

In the attempt to improve the teachers' readiness in using technology in the learning process, IB, an Indonesian language teacher, reveals the supporting as well as inhibiting factors of the implementation:

The utilization of technology in the learning process is supported by the school by providing adequate facilities and infrastructures, such as the internet, router in each class, various training for the teachers, as well as the socialization of the usage to the students. However, the implementation is not without a problem. When teachers and students access the internet at the same time, the connection is low, even though the school has provided as much as 100MBPs. Another problem comes from senior teachers. They need all-time assistance in using technology for teaching (January 24, 2020).

Meanwhile, EP, a teacher of Light Vehicle Mechanical Technology, showed the learning using information and communication technology has advantages and disadvantages:

The use of technology in this school is highly supported by the availability of Wi-Fi, LCD, and projector. Even so, not all teachers are aware and technologically literate (January 23, 2020).

Based on the data and information above, it can be concluded that the use of information technology and communication have supporting factors and inhibiting factors. Supporting factors include: the existing infrastructure in the form of a router in each class can facilitate wifi when learning to use internet access, as well as training and socialization held by schools for teachers and students. Meanwhile, the factors inhibiting the use of information and communication technology include: a weakened wifi network when all students and teachers

alike access the internet, also some elderly teachers still need assistance in utilizing information and communication technology in learning.

### **Evaluation and Follow-up for the Implementation of Academic Supervision**

DAN, a history teacher in the school explains the evaluation and the follow-up of the implementation of the academic supervision for the teachers:

A supervisor will recommend for the results of the supervision, and the headmaster makes the report of the supervision results of all teachers. Based on the result, the headmaster arranges a follow-up program to improve the teachers' skills in using technology. The follow-up can be in the form of activities in MGMP of the school, training, or self-development (January 23, 2020).

A similar opinion is also given by WLD, the mathematics teacher of the school:

The evaluation of academic supervision is conducted by a supervisor in the supervision program. It contains several aspects necessary to do in the learning process, such as completing the teaching tools, using attractive learning media, and others. A book report for the supervision result is made and becomes the guideline for the school to conduct a follow-up, such as training in the use of learning media based on information and communication technology (January 16, 2020).

The statements are supported by the school documents, which are the result of the academic supervision documented by the headmaster. The results will be the guidelines to arrange a follow-up program. To conclude, after the supervision program, the supervisor evaluates the learning media and the implementation of the teaching and learning process using the media. The evaluation becomes the guideline for the follow-up program. To prepare the teachers in using technology for learning, the follow-up program is necessary. The teachers need to improve their competence and join various education and training programs. The school can also facilitate the teacher forum (MGMP) at school.

## **5. Discussion and Conclusions**

### **Planning Academic Supervision to Improve the Teacher Readiness**

The results revealed that the academic supervision program is carried out once a year by the headmaster together with the vice headmaster in charge of the school curriculum and the senior teachers. To encourage the students to learn, the instrument of the supervision urges the teachers to use various learning media, especially those

based on technology, in the classroom.

They found that supervision activities should be done on a regular basis in the school to improve the learning process. The goal of academic supervision is to improve the teachers' competence, enabling them to help students achieve the learning outcomes. The supervision should also include the utilization of information and communication technology. It is similar to the findings of Suhardang (2010: 47), in that the goal of academic supervision is to improve the learning process and the learning outcomes, supported by the use of learning media, especially audiovisual. Further, Milawati and Sholeh (2019) revealed that teachers should be ready to use digital media and set interesting learning objectives, such as by creating new methods using technology.

### **The Implementation of Academic Supervision in Relation to the Teachers' Readiness**

The results show that teachers have used technology in the classroom. They employ social media, Edmodo, flash, Kahoot, and others. Most of the teachers use the internet during the learning process; students are allowed to access the internet to learn about the topics or the materials. This way, they become more active. PowerPoint slides and videos are presented using LCD and Projector, attracting the students' interest even more.

According to Inan and Lowther (2009), teachers' readiness in using information and communication technology is one of the positive factors influencing the learning process. Similarly, Kumar et al. (2008) showed that the existence of digital learning is unavoidable. It offers interesting approaches to be used in the classroom, leading to improving the learning quality. Besides, Ermeley et al. (2014) revealed that the use of computerized methodology can improve and accelerate the teaching process. Shing and Chan (2014) also showed that the use of technology in the classroom can strengthen the learning environment in the classroom. Information and Communication Technology encourage students to participate in classroom activities (Al Harbi, 2014). Castano-Munoz et al. (2014) also explain that the internet has the potential to improve communication and interaction in the classroom, helping the students to overcome the limitation of place and time. Information technology is closer to the students' way of thinking (Dywer, 2000).

In short, information and communication technology has a positive impact on the learning process, in that it makes the classroom livelier. Digital learning improves the communication and interaction of the students since they use technology in their daily activities. Therefore, academic supervision can be said necessary. Indeed, the results show that the teachers are ready to combine the teaching methods with information and communication technology.

In the learning context, according to Siahaan (2010),

information and communication technology is not only limited to sophisticated electronic devices, but also other tools, such as projector, sound slides, radio, and television. In the educational context, the use of technology can include the utilization of mobile phone, facsimile, and internet (website and special e-mail). For the classroom activities, the rooms can be equipped with a projector and printer (Sonhadji, 2012: 53). Other than the mentioned devices, George et al. (2000) and Kellenberger and Hendricks (2000) claim that the use of computers in the learning process can increase knowledge, teaching variation, and trust.

Moris (2010) showed that one of the obstacles in the utilization of technology in the school comes from the teachers, especially the older ones, in that they are not aware of its usefulness. As a consequence, several senior teachers isolate themselves from others because they cannot use a computer (Msila, 2015). Many teachers are not technologically literate and are reluctant to learn, causing them to be left behind (Fitriah & Mirianda, 2019). Similar to those opinions, Yanti et al. (2008:13) state that the problem of utilizing information technology is the human resource. They do not update themselves with the innovations of technology in the global era.

To conclude, the teachers are considered ready to use technology, supported by the availability of facilities and infrastructures at school, such as internet network and router, as well as socialization about the implementation. On the other hand, the problem of the implementation may come from human resources. In this case, it is from the senior teachers who are not willing to learn about information and communication technology for the teaching process. Another obstacle comes from the low internet connection during the learning process.

### **Evaluation and Follow-up of the Academic Supervision**

According to Wibowo (2012: 226), evaluation means identifying the needs for training and development. Meanwhile, Arsanti (2018) argues that teachers' mastery of technology is an advantageous aspect to make creative materials, bringing the enthusiasm of the students in the classroom. Copriady (2014) concludes that the technical competence of a teacher is necessary. The headmaster needs to encourage teachers to develop their skills in using technology through courses and training (Kumar et al., 2008). Moris (2010) suggests that the training for teachers should be relevant to their expertise. The training will increase their participation to learn and use technology (Wirastuti et al., 2018). Through the training, the teachers will get new knowledge, understanding, and skills in using information and communication technology, allowing them to improve the teaching and learning process (Budiman et al., 2015).

Sending the teachers to attend a particular training is the follow-up of the evaluation results. Training is necessary since it can encourage teachers to create interesting

learning media that is suitable for the students' development. Teachers' skills in using information and communication technology can optimize the teaching and learning process.

## Acknowledgments

The research is carried out with the assistance and the master's thesis research grants (PTM) of The Directorate General of Research and Community Service (DRPM-Direktorat Jenderal Penelitian dan Pengembangan Masyarakat) of The Ministry of Education and Culture of The Republic of Indonesia year 2020.

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