



# Distance Learning in Vocational High Schools during the COVID-19 Pandemic in West Java Province, Indonesia

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## ABSTRACT

This study aims to investigate (1) the availability of learning facilities for distance learning (or online learning), (2) the ability of students and teachers to utilize the learning facilities, and (3) how distance learning activities take place at public or private vocational high schools, specifically whether it is perceived to be more interesting than ordinary learning. This study used a survey method to obtain data and a quantitative descriptive method to analyze the data. The type of data in this study was primary based on the responses of respondents or individuals from groups representing the population of public and private vocational high schools, especially in the Electrical Engineering Clusters in the entire areas of West Java. The results revealed that online learning has been carried out in many public and private vocational high schools in West Java. This study indicates that the availability of online learning facilities, the utilization of facilities, and the online learning process in public vocational high schools were better than those in private vocational high schools. In general, students of both public and private vocational high schools stated that online learning is not more interesting than ordinary learning, although most of them can understand the lessons taught and they were given an opportunity by their teachers to actively participate during the learning process.

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## 1. INTRODUCTION

Indonesia ranked fourth as the most populous country in the world with 237,641,300 inhabitants based on the population census in May 2010. Based on the projected population of Indonesia for 2010-2035, Indonesia's population in 2016 reached 258,704,900 inhabitants and West Java is the province with the largest population in Indonesia with 47,379,400 inhabitants

(<https://setjen.pu.go.id/source/File%20pdf/Buku%20Induk%20Statistik/Buku%20Induk%20Statistik%20Tahun%202017.pdf>). This province has an area of 35,377.76 km<sup>2</sup> which consists of 18 regencies, 9 cities, 627 sub-districts, and 5,957 villages or urban villages (<https://jabar.bps.go.id/publication/2019/08/26/db8f40b62e53f995a676cd19/master-file-desa-provinsi-jawa-barat-2019.html>). Geographically as

shown in **Figure 1**, West Java is a capital buffer province so that it is not surprising that West Java has become the second-most populous province after Jakarta.

In 2020-2030, according to the Ministry of Manpower of the Republic of Indonesia, Indonesia will enter the demographic bonus era. In that period, it is estimated that Indonesia's productive age population will reach 70 percent. This demographic bonus will be a blessing if the productive workforce that dominates the total population can be well absorbed in the labor market. On the contrary, this demographic bonus can also be a disaster if the workforce is not well absorbed by the labor market (<https://www.pikiran-rakyat.com/nasional/pr-01280554/bonus-demografi-kualitas-lapangan-kerja-terus-ditingkatkan-401746>).



**Figure 1.** West Java as a capital buffer province of Jakarta

(<https://jabarprov.go.id/index.php/pages/id/99>)

A vocational high school (VHS) is a formal high school level which prepares human resources to have the knowledge, skills, and attitudes as middle-level skilled workers

(<http://psmk.kemdikbud.go.id/konten/4125/standar-nasional-pendidikan-smk-dan-mak>). Currently, West Java has the highest number of VHS's in Indonesia with 2,942 schools (287 public VHS's and 2,655 private VHS's) out of the total of 14,327 VHS's in Indonesia. It is likewise with the number of students. West Java has the largest number of students in Indonesia with a total of 1,082,612 students (<http://datapokok.ditpsmk.net/>).

In terms of the Expertise Spectrum of VHS, there are 9 expertise areas of VHS in Indonesia, namely (1) Technology and Engineering, (2) Information and Computer Technology, (3) Health and Social Work, (4) Agribusiness and Agrotechnology, (5) Maritime, (6) Business and Management, (7) Tourism, (8) Energy and Mining, and (9) Arts and Creative Industries. In the expertise area of Technology and Engineering, there are 13 expertise programs, including Electronic Engineering and Electrical Engineering which are called Electrical Engineering Clusters. Expertise competencies in the Electronic Engineering consist of Audio Video Engineering, Industrial Electronic Engineering, Mechatronic Engineering, Power Electronics Engineering, and Communication and Medical Instrumentation. Meanwhile, expertise competencies in the Electricity Engineering consist of Electric Power Engineering, Electric Power Network Engineering, Electric Power Installation Engineering, Industrial Automation Engineering, Refrigeration and Air Conditioning Engineering, and Electric Power Engineering (<http://psmk.kemdikbud.go.id/konten/3818/spektrum-keahlian-smk-perdirjen-dikdasmen-no-06dd5kk2018-tanggal-7-juni-2018>).

Although this study pertains to distance learning in vocational high schools in West Java, it was conducted in the context of the COVID-19 pandemic. Thus, apart from

discussing information about the profiles of those schools it is essential to touch upon the pandemic context which serves as the background of the study. It is widely acknowledged that online learning has been common practice in Indonesia and in most other parts of the world due to the outbreaks of the Coronavirus which have forced people to study from home and work from home. In Indonesia, the Coronavirus might have infected the people in January or February 2020, but officially Indonesia declared confirmed cases later in March 2020.

Precisely, on March 2, 2020, the President of the Republic of Indonesia, Joko Widodo, officially announced Indonesian citizens who contracted the virus in Jakarta. Therefore, since then, the COVID-19 had entered Indonesia. The COVID-19 initially became an epidemic in Wuhan, China since December 2019 (Phelan *et al.*, 2020), then hit 36 countries including the United States (Burke, 2020). Therefore, on March 11, 2020, the Director-General of WHO, Tedros Adhanom Ghebreyesus, officially stated that the COVID-19 had become a global pandemic (Anjorin, 2020), and even Bill Gates referred to it as the pandemic of this century (Gates, 2020).

During the current COVID -19 pandemic, efforts are still maintained to prepare human resources, so that the students have the knowledge, skills, and attitudes as middle-level skilled workers for vocational graduates. However, these efforts are being challenged by unprecedented situations such as social distancing rules where schools and offices are closed to curb the viral infections. Furthermore, the Minister of Education and Culture, Nadiem Makarim issued a policy as outlined in Circular Letter No.4/2020 on March 24, 2020 (<http://www.datadikdasmen.com/2020/03/semendikbud-no-4-tahun-2020.html>) regarding Studying and Learning Processes during the spread of the COVID-19. Moreover, the pro-

cess of learning from home is carried out with the following conditions:

- Learning from home is conducted via online or distance learning to provide a meaningful learning experience for students without being burdened with the demands of completing all curricular goals for grade promotions and graduation.
- Learning from home can be focused on life skills education including the COVID-19 pandemic.
- Activities and assignments of learning from home can vary between students, based on their interests and conditions, including considering the gap of access and learning facilities at their home.
- Evidence or products of learning activities from home are given qualitative and useful feedback from the teacher without being required to give quantitative scores (<http://www.datadikdasmen.com/2020/03/se-mendikbud-no-4-tahun-2020.html>).

By paying attention to the Minister of Education and Culture's policy on the learning process during the COVID-19 pandemic and considering that VHS's specializing in the Electrical Engineering clusters have relatively more competencies compared to other vocational clusters, it is necessary to conduct a study to investigate (1) the available learning facilities for distance learning, (2) the ability of students and teachers to utilize the learning facilities, and (3) how distance learning activities take place at the public or private VHS's whether it can provide a meaningful learning experience for students without being burdened with the demands of completing all curricular targets for grade promotions or graduation.

## 2. METHODS

This study used a survey data collection technique (<http://www.uky.edu/~kdbrad2/EPE619/Handouts/SurveyResearchReading.pdf>) and a

quantitative descriptive method for data analysis. It drew upon primary data which were obtained by distributing questionnaires to respondents that aimed to explore information about the availability of online learning facilities, the ability to utilize facilities for students and teachers, and learning activities during the COVID-19 pandemic. The respondents came from groups representing the population of the public and private VHS's specializing in the Electrical Engineering cluster scattered in several cities and regencies in West Java such as Bandung, Cimahi, Tasikmalaya, Majalaya, Cirebon, South Cikarang, Central Cikarang, Palimanan, Jatibarang, Sumedang, and Bogor. This survey reached many respondents, namely 329 respondents from Public VHS's and 52 respondents from Private VHS's.

This study was conducted on April 18-20, 2020. The data collection procedures were carried out through several stages, namely: (a) compiling a list of questions in the google form for students, (b) distributing the list of questions via email and WhatsApp to school headmasters and teachers, and (c) recapitulating and analyzing the data according to the responses obtained proportionally.

## 3. RESULTS AND DISCUSSION

As has been seen, the COVID-19 pandemic has swept across the world. The world of education has also been affected and even there was a closure of schools in 107 countries on 18 March 2020 (Viner *et al.*, 2020). The online learning process has been widely applied by utilizing Information and Communication Technology (ICT) to transfer knowledge from a distance, namely using the Internet, videos or audios, communication media, and learning software

([https://www.researchgate.net/profile/Anne\\_Uukkivi2/publication/329629441\\_E-LEARNING\\_MATERIALS\\_METHODS\\_AND\\_TOOLS\\_TO\\_ACTIVATE\\_STUDENTS/links/5c12b49c92851c39eb616d/E-LEARNING-MATERIALS-METHODS-AND-TOOLS-](https://www.researchgate.net/profile/Anne_Uukkivi2/publication/329629441_E-LEARNING_MATERIALS_METHODS_AND_TOOLS_TO_ACTIVATE_STUDENTS/links/5c12b49c92851c39eb616d/E-LEARNING-MATERIALS-METHODS-AND-TOOLS-)

TO-ACTIVATE-STUDENTS.pdf). To discover the availability of learning facilities for the distance learning process in public and private VHS's, the ability of students and teachers to utilize the learning facilities, and distance learning activities in public and private VHS's specializing in the Electrical Engineering cluster in West Java whether it is interesting than ordinary learning, we conducted a survey by distributing questionnaires through Google form to students, teachers, and headmasters of public and private VHS's in West Java. The results and discussion of the study are presented as follows:

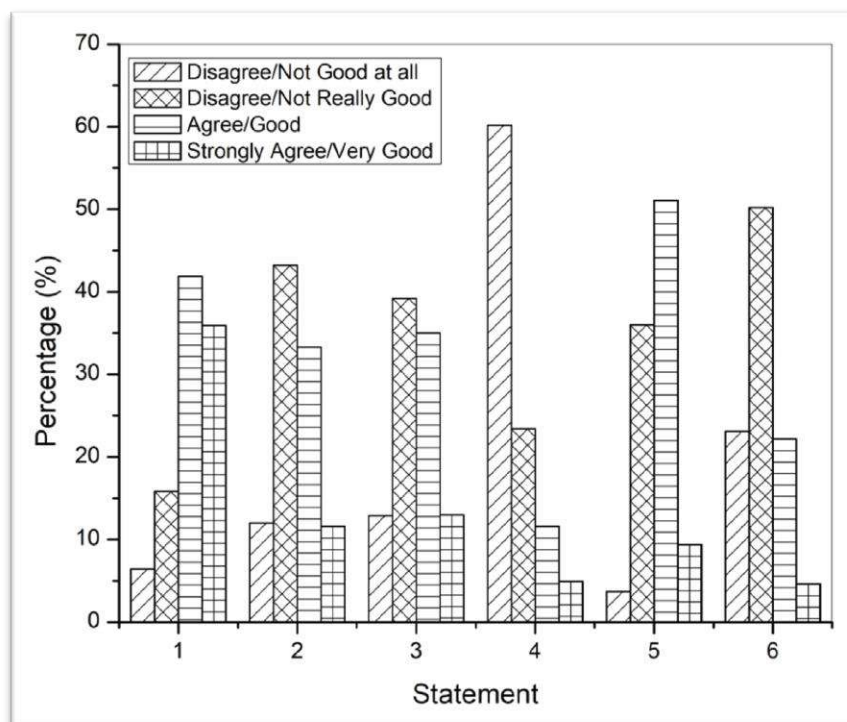
(1) Distance Learning Facilities (e-learning facilities)

Moe and Naing (2012) divided distance learning facilities into 3, namely (a) information source facilities, namely computers or laptops, the Internet, e-books, the world wide web, and Wikipedia, (b) social media facilities,

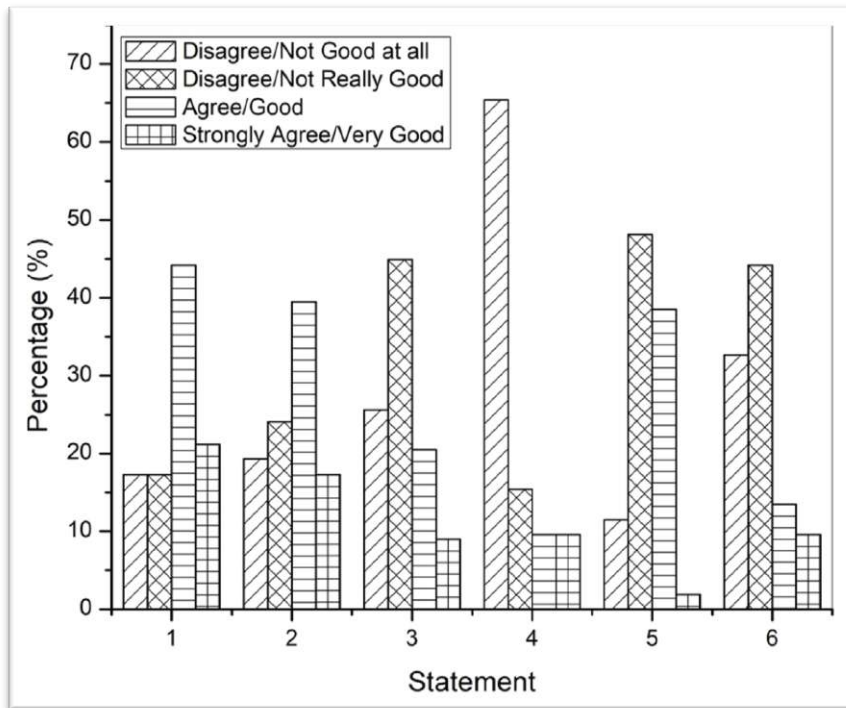
such as *YouTube, Moodles*, blogs, and e-mail (c) specialized facilities for the learning process, such as digital games (Moe and Naing, 2012). In this study, the following statements were asked to the respondents:

1. I have my own computers, laptops or smartphones.
2. I have textbooks, worksheets, and other supporting books
3. I have an Internet service at home with good connections and an adequate speed
4. I am able to pay for my Internet service
5. The local government/school assists me with an Internet service
6. My school provides online vocational subject practicum materials, and virtual laboratory facilities.

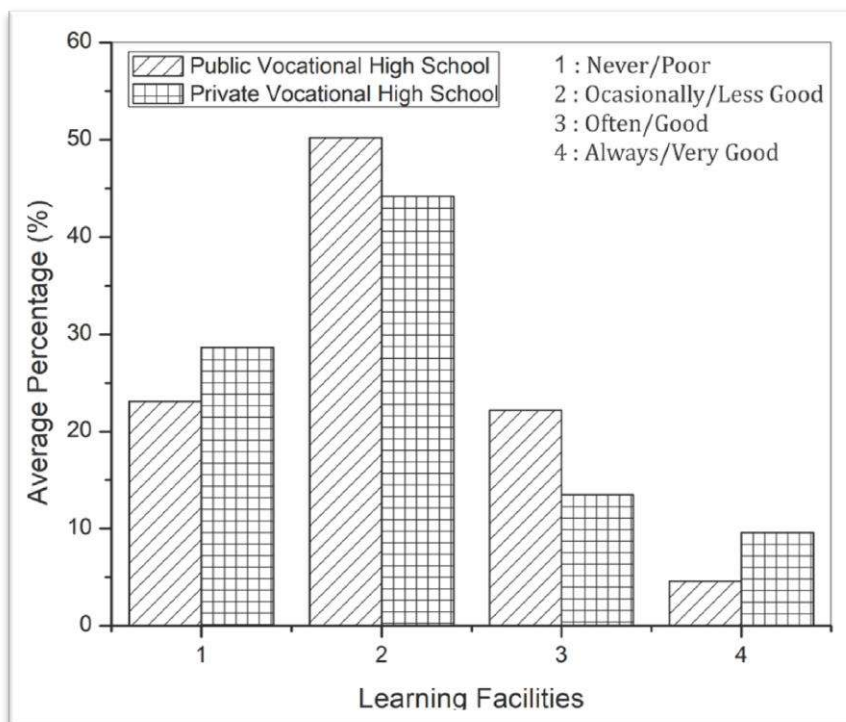
The results of the survey of learning facilities are summarized in **Figure 2**.



(a)



(b)



(c)

**Figure 2.** The available e-learning facilities of (a) public vocational high school, (b) private vocational high school. (c) The average percentage of learning facilities availability

**Figure 2** shows that the average of students from Public Vocational High Schools relatively has better online learning facilities compared to students from Private Vocational High Schools. Students of Public Vocational High Schools stated that the facilities they have are very good (14.07%), good (33.37%), less good (35.3%), and poor (17.32%) in which it is different from students of Private Vocational High Schools who stated that the facilities they have are very good (7.7%), good (21.2%), less good (42.3%), and poor (25.82%). Interestingly, 16.5% of students of Public Vocational High Schools and 18.2% of students of Private Vocational High Schools claimed to have received sufficient financial assistance from the government or school for accessing the online learning service. For virtual laboratory facilities, only 4.6% of students of Public Vocational High Schools and 9.6% of students of Private Vocational High Schools stated that it was very good, and 22.2% of students of Public Vocational High Schools and 13.5% of students of Private Vocational High Schools stated that it was good.

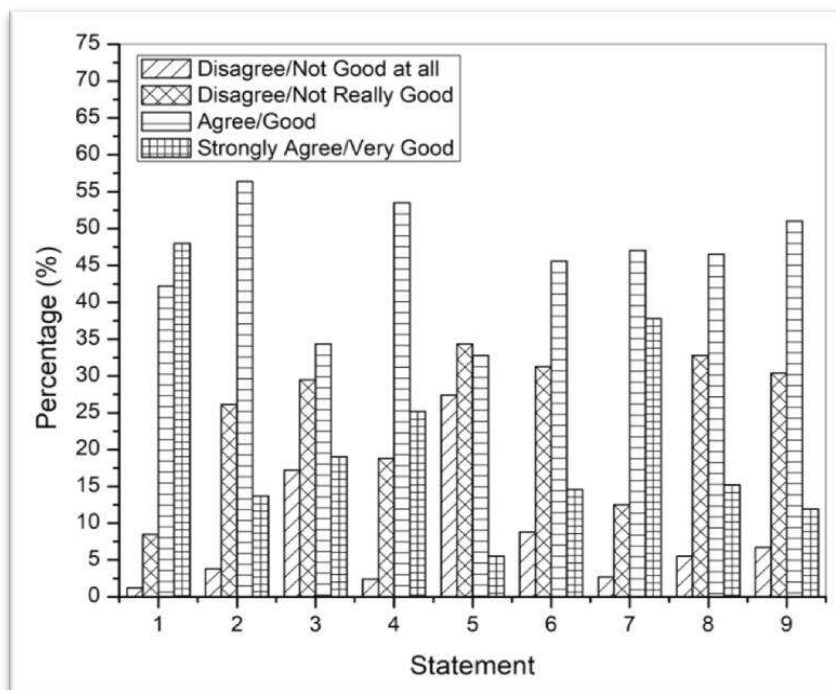
(2) The Ability of Students and Teachers to Utilize the Learning Facilities

The ability to utilize the available facilities needs to be questioned as well. This is

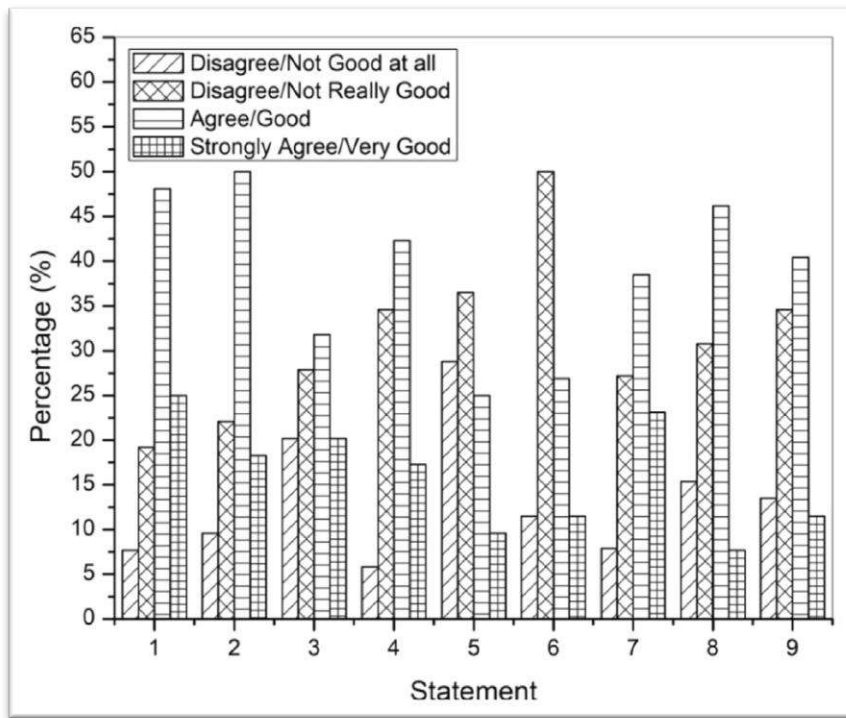
because, even though the facilities are available, but if students and teachers have no willingness and ability to use them, all of the available facilities are meaningless (Eze *et al.*, 2018). In this study, the questions related to these following statements:

1. The teachers have utilized e-learning facilities for distance learning
2. I have enough time for distance learning
3. The teachers use learning applications (such as Google Classroom, Zoom, and Webex)
4. I am able to use learning applications
5. I use learning applications provided free from the Ministry of Education and Culture
6. My teachers and I use electronic media and social media to enhance the learning materials
7. I am able to use software of Electronic Circuits simulation
8. I am able to use many Electronic Circuits applications to calculate voltage, electric current.

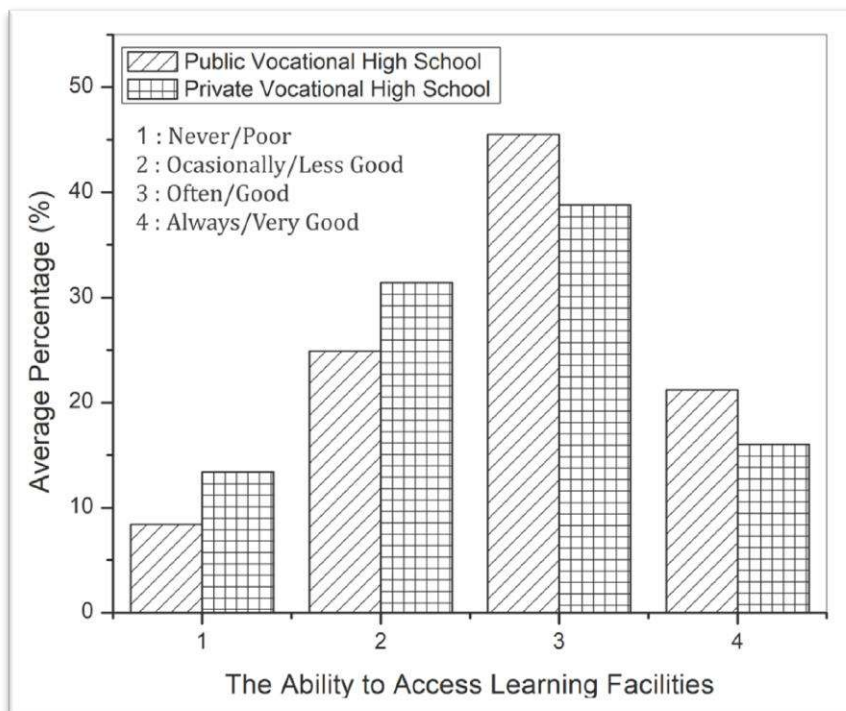
The results of the survey conducted for the utilization of learning facilities are shown in **Figure 3**.



(a)



(b)



(c)

**Figure 3.** Utilization of learning facilities by students and teachers of (a) public vocational high school, (b) private vocational high school

From **Figure 3**, it can be concluded that in general, students of Public VHS's can utilize the available online facilities, namely 47.05% at good criteria and 27% at very good criteria. Meanwhile, students of

Private VHS's that can utilize the available online facilities were at 40.4% for good criteria and at 11.5% for very good criteria. Interestingly, in general, students have been able to utilize the electronic circuit software,



namely at 46.5% for good criteria and at 15.2% for very good criteria (Public VHS's) and at 46.2% for good criteria and at 7.7% for very good criteria (Private VHS's). They have also been able to utilize the calculation application in the electrical subject learning process, namely at 51% for good criteria and at 11.9% for very good criteria (Public VHS's) and at 40.4% for good criteria and at 11.5% for very good criteria (Private VHS's).

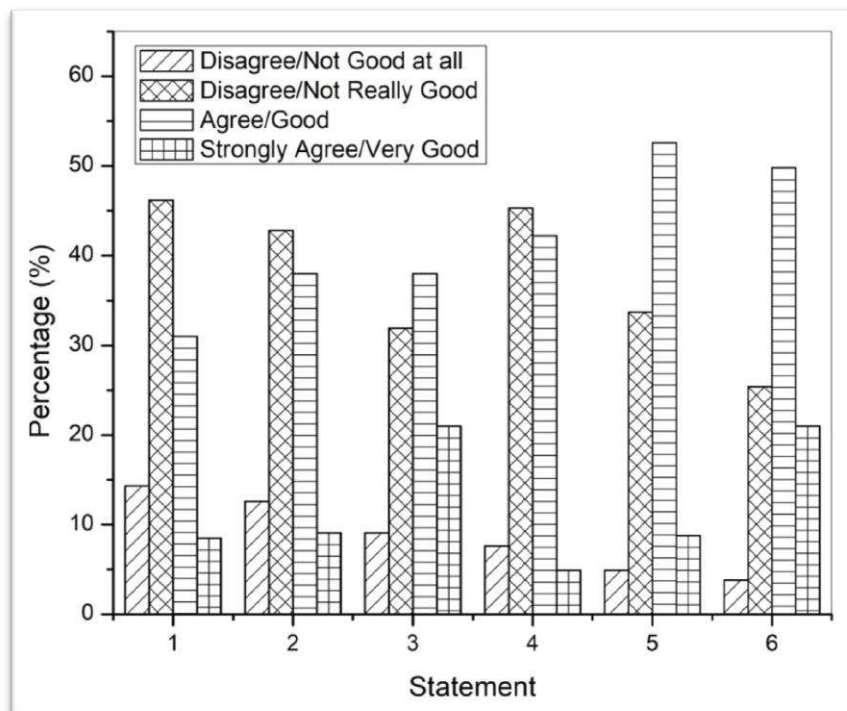
(3) Distance Learning Activities

Distance or online learning activities can be more interesting and make students more active and easy to understand the learning material (Basilaia & Kvavadze, 2020). For this reason, it is necessary to examine whether this can happen to VHS's students in West Java during this distance learning time. In this study, the questions are related to learning

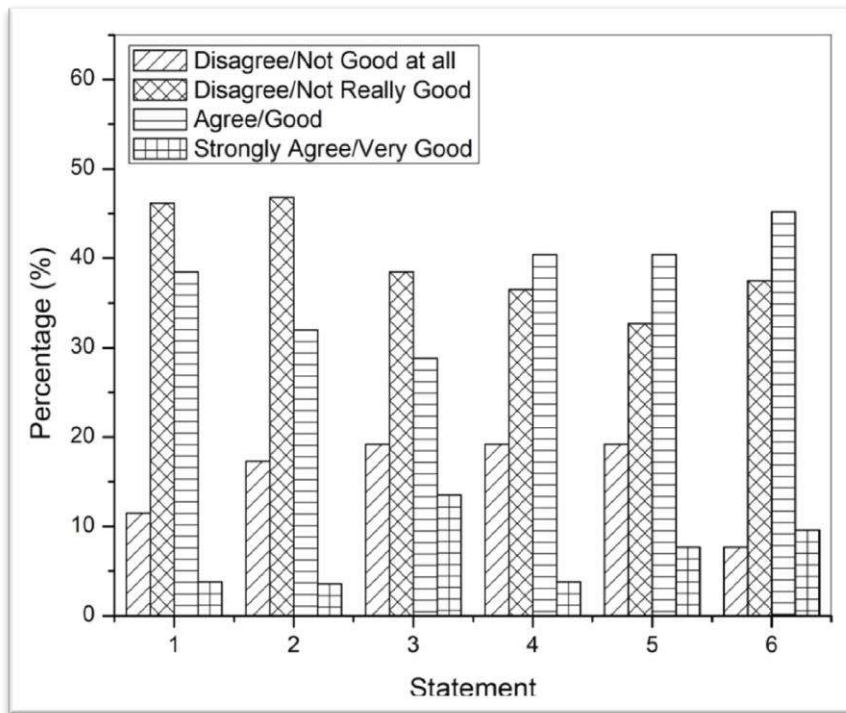
activities as mentioned in these following statements:

1. The amount of learning time and the number of assignments are the same as the normal learning
2. The online learning process is more interesting than regular learning
3. The teachers give more assignments than usual
4. The distance learning helps me understand more learning material than regular learning
5. The practicum materials of vocational subject are suitable for industrial needs.
6. The teachers give opportunities to students to ask questions and to actively participate during learning process.

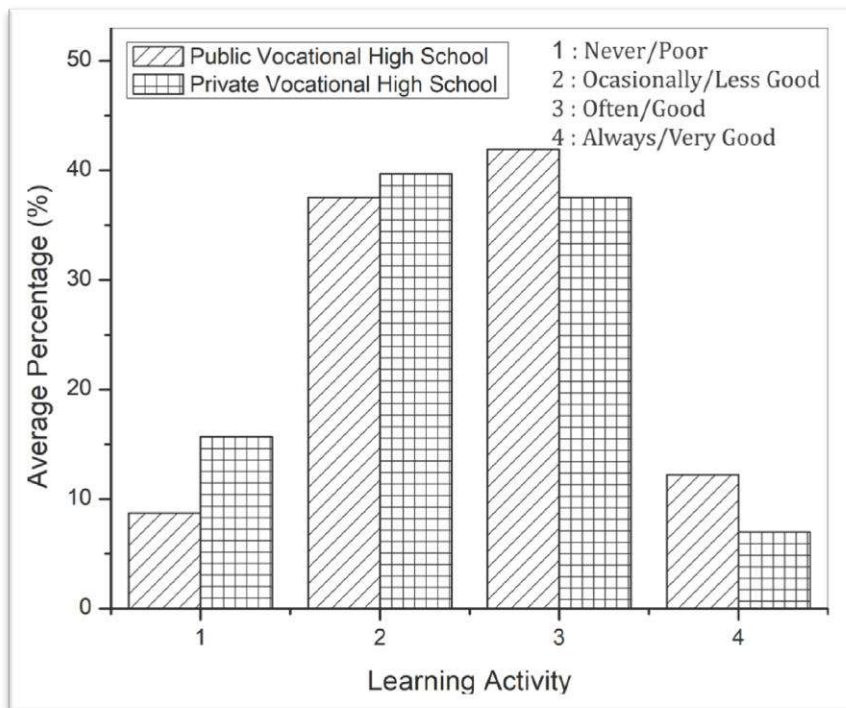
Figure 4 shows the results of the survey we did in terms of learning activities.



(a)



(b)



(c)

**Figure 4.** Learning activities during the distance learning process of (a) public vocational high school, (b) private vocational high school. (c) The average percentage of learning activity

**Figure 4** indicates that according to students of VHS's, the distance learning that has been implemented by their school is good for 39% of students and very good for 10.52% of students. Furthermore, students of Private VHS's stated that it is good for 33.74% of students and very good for 7.08% of students. 87.5% of students of Public

VHS's and 78.8% of students of Private VHS's stated that online learning was not attractive to them. Nevertheless, 74.2% of students of Public VHS's and 51.9% of students of Private VHS's stated that they were given the opportunity to actively participate during the online learning process. Interestingly, for practicum material in the online learning process, 52.6% of students of Public VHS's and 40.4% of students of Private VHS's stated that it had been suitable with the current needs of the industry and 8.8% of students of Public VHS's and 7.7% of students of Private VHS's stated that it had been highly suitable with the current needs of the industry. 42.2% of students of Public Vocational High Schools and 40.4% of students of Private VHS's stated that the vocational subjects could be well understood and 4.9% of students of Public VHS's and 3.8% of students of Private VHS's stated that the vocational subjects could be highly well understood in the online learning process. Furthermore, 59% of students of Public VHS's and 42.3% of Private VHS's felt burdened with more assignments in the online learning process compared to the ordinary learning process.

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## 4. CONCLUSION

From our survey, it can be concluded that online learning has been carried out in many public and private VHS's in West Java. From the results of this study, it was found that the available online learning facilities, the utilization of facilities, and the online learning process in VHS's were better than those in Private VHS's. In general, students of Public and Private VHS's stated that online learning is not more interesting than ordinary learning, although most of the students can understand the provided lesson and are given an opportunity by the teacher to actively participate during the learning process.

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## 6. AUTHORS' NOTE

The author(s) declare(s) that there is no conflict of interest regarding the publication of this article. Authors confirmed that the data and the paper are free of plagiarism.

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