

Overview of learning activities in vocational high schools during the covid-19 pandemic

Fivtyka Odiana^{a*}, Sebelas Maret University, Faculty of Teacher Training and Education, Department of Educational Technology, Surakarta, Indonesia <https://orcid.org/0000-0001-9232-1378>

Roemintoyo Roemintoyo^b, Sebelas Maret University, Faculty of Teacher Training and Education, Department of Educational Technology, Surakarta, Indonesia <https://orcid.org/0000-0003-1152-1226>

Triana Rejekiningsih^c, Sebelas Maret University, Faculty of Teacher Training and Education, Department of Educational Technology, Surakarta, Indonesia, <https://orcid.org/0000-0003-0017-2753>

Suggested Citation:

Odiana, F., Roemintoyo, R. & Rejekiningsih, T., (2022). Overview of learning activities in vocational high schools during the covid-19 pandemic. *World Journal on Educational Technology: Current Issues*. 14(3), 604-618. <https://doi.org/10.18844/wjet.v14i3.5994>

Received from January 20, 2022 revised from March 10, 2022; accepted from May 15, 2022

Selection and peer review under responsibility of Prof. Dr. Servet Bayram, Yeditepe University, Turkey.

©2022 Birlesik Dunya Yenilik Arastırma ve Yayıncılık Merkezi. All rights reserved.

Abstract

The emergence of the Covid-19 outbreak caused the educational aspect to need adjustments in carrying out learning. Vocational schools are the objects most affected by the COVID-19 outbreak, as a result the learning process that should be based on practice must be temporarily suspended and replaced with tasks. Therefore, this study aimed to describe learning activities in Vocational High Schools during the COVID-19 pandemic, such as lesson plan, students' practicum implementation and how technology are used to support learning activities. This type of research is qualitative, with the research subject being a vocational school teacher. The results showed that the lesson plans that are commonly used are now changed by giving assignments, during distance learning teachers deliver materials using various media. This research can be an illustration for teachers and policy makers in developing models, media and learning strategies to improve the quality of learning in vocational school.

Keywords: vocational, pandemic, learning, technology, learning strategy;

* ADDRESS FOR CORRESPONDENCE: Fivtyka Odiana, Master Program of Educational Technology, Faculty of Teacher Training and Education, Sebelas Maret University, Surakarta, Indonesia
E-mail address: fivtykao@gmail.com

1. Introduction

1.1. Conceptual and Theoretical Foundations

The world is still facing the same problem, namely the novel coronavirus (SARS-CoV-2) outbreak that causes a disease known as Covid-19. This virus was discovered in Wuhan, China, in December 2019 (Baloch et al., 2020). The Covid-19 virus continues to spread and infect many countries. Since the existence of the virus from December 2019 to February 2020, in Indonesia, there have been no cases of patients infected with Covid-19. It was only on March 2, 2020, that Indonesia reported its first case of Covid-19 with two people infected, and it continues to grow every day. On March 11, 2020, the World Health Organization (WHO) declared the Covid-19 virus a global pandemic (Utomo et al., 2020). This global pandemic has demanded a dramatic paradigm shift in terms of how people interact with one another (Jamaludin et al., 2020). Activities that are usually carried out directly and together with many people must be limited to reduce the increased number of Covid-19 patients.

With the increasing number of daily cases in Indonesia, the government has issued many new policies to adjust to the pandemic situation. This policy also applies to learning activities in formal and non-formal schools carried out in Indonesia. On March 24, 2020, the Indonesian government through the Minister of Education and Culture issued Circular Letter Number 4 of 2020 which contains the Implementation of Education Policies in the Emergency Period for the Spread of Corona Virus Disease (Covid-19) (Jailani et al., 2020). The circular contains several important points, including the shift from learning at school to learning from home (Motamedi, 2019). This decision is certainly new for Indonesian education, especially at primary and secondary levels. Everything was done suddenly without any preparation and readiness from the school, teachers, and students.

Distance learning or distance education is a field of education that focuses on pedagogy or andragogy, technology, and the design of learning systems that are combined effectively in providing education to students (Al-Arimi, 2015),(Pramana et al., 2021). Although distance learning has existed for a long time, its application in Indonesia is still limited. Distance learning is a learning process that allows teachers and students to be in different locations (Erol & Danyal, 2020). In Indonesia, the distance learning policy is called "Learning from Home" which is stated in the circular letter of the Ministry of Education and Culture of the Republic of Indonesia Number 701/LL7/AK/2020 (Revilda et al., 2021).

Vocational high school (VHS) is one type of high school in Indonesia. VHS is a formal secondary school level that prepares students in Indonesia to have insight, expertise, and behavior as skilled workers at the secondary level (Mulyanti et al., 2020),(Batsila, 2020). The purpose of VHS is to prepare prospective workers who are ready for the business world and the industrial world. Therefore, Indonesia is trying to make VHS graduates have high competence and competitiveness (Handayani et al., 2020). The VHS environment is designed to be like real working conditions. Thus, it is expected that VHS students have superior competencies compared to students in other schools.

Learning in VHS includes dual system education with the implementation of practical education in schools and internships in the business world or the industrial world. The principle of dual system education at VHS is known worldwide for its ability to provide a highly skilled workforce capable of adapting to new conditions, changes, and the introduction of new technologies (Owais et al., 2020). It provides an alternative view that allows students to develop competence through experiential learning and vocational practice (Berezovska et al., 2020). This viewpoint on competency development is finally suitable for the practice of vocational education because it is carried out through internship (Polat et al., 2010), (Asmara & Wu, 2020). Before that, students are equipped with practices carried

out in VHS. Therefore, the responsibility for achieving successful learning situations concerning vocational education lies with teachers, students, and employers (Rönnlund & Rosvall, 2021).

Based on this statement, vocational education should organize practical activities for students. However, considering the current Covid-19 pandemic, it is not possible to carry out practical activities in schools; school activities have changed to online learning. Online learning activities have become a common practice in Indonesia and most countries due to the outbreak of the Coronavirus which is forcing people to study and work from home (Mulyanti et al., 2020). Research by Titan proves that distance learning with active communication between students and teachers gives better results (Utomo et al., 2020), (Titan et al., 2017).

Based on the regulation of the Directorate General of Primary and Secondary Education of the Ministry of Education and Culture Number 06/D.D5/KK/2018 concerning the Spectrum of Expertise for Vocational High Schools (VHS)/Vocational Madrasah Aliyah (VMA), the areas of expertise in VHS/VMA include 1) technology and engineering, 2) energy and mining, 3) information and communication technology, 4) health and social work, 5) agribusiness and agrotechnology, 6) maritime affairs, 7) business and management, 8) tourism, and 9) arts and creative industries (Spektrum Keahlian Sekolah Menengah Kejuruan (SMK) / Madrasah Aliyah Kejuruan (MAK), 2018),(Fauzi et al., 2020). The area of expertise as the focus of the researchers is technology and engineering with the construction and property technology expertise program. In addition to theory, the skill program is also supported by many practices that must be carried out by students, including using software applications such as AutoCAD and Sketchup, measuring soil tools, making bricks, etc. If 100% of learning is carried out by distance learning, some students do not have practical tools and limited funds to buy the materials needed for practicum. If the practice is carried out at school, the tools and materials have been prepared. According to the Minister of Education and Culture's policy regarding the learning process at VHS and other schools during the Covid-19 pandemic, both learning theory and practice are not allowed in schools but by distance learning (Schneider & Council, 2021).

1.2. Related Research

The existence of technological developments has a good impact on various fields, one of which is education. These technological developments must be utilized optimally to assist the learning process. Everyone agrees that technology has made it easier to acquire various knowledge (Triyanto & Rejekiningsih, 2021). In addition, the existence of information and communication technology has been able to create various kinds of individual opportunities to learn and access learning resources outside of school (Motamedi, 2019),(Shatri, 2020). Various kinds of learning resources are available in one technology grip. These learning resources include electronic books, audio, pictures, learning videos, multimedia, etc. Due to the existence of a variety of diverse learning technologies, teachers and developers must be smart in choosing the right technology according to their needs and learning objectives. However, new learning spaces that can be created by technological sophistication must be designed based on pedagogical needs (Roemintoyo & Budiarto, 2021). By looking at the needs of students and learning objectives, the technology used by the teacher will be appropriate (Budiarto et al., 2021). In addition, the acceleration of information and communication technology that makes access to digital information easier does not necessarily mean that the information is always correct and valid (Ghavifekr & Rosdy, 2015). Thus, the teachers and students need to be careful when using technology.

Several previous studies have shown that distance learning can take place with any tool that meets learning aspects such as self-study, assignments, quizzes, discussions, and meetings via video

conferencing (Utomo et al., 2020). Virginia Gewin noted the usefulness of live video conferencing to follow up on the self-study modules previously described, but the results suggest that live video conferencing should not be used for all educational activities due to poor connections (Schneider & Council, 2021). In the Philippines, some teachers record and upload their lessons online for students to access and use Google Classrooms, WebQuest, and other online sites (Toquero, 2020). Based on the Circular of the Minister of Education and Culture of the Republic of Indonesia, for the areas affected by Covid-19, students are required to do online learning from home through video conferences, electronic documents, and other online means. The Ministry of Education and Culture provides free online learning facilities, including Rumah Belajar, Google G Suites for Education, Kelas Pintar, Microsoft Office 365, etc. (Pembelajaran secara Daring dan Bekerja dari Rumah dalam Rangka Pencegahan Penyebaran Corona Virus Disease (COVID-19), 2020). Through online learning, teachers and students can communicate asynchronously and synchronously (Amiti, 2020). Asynchronous is one-way direction learning such as the distribution of learning materials, assignments, and task collection. Synchronous means that learning takes place in a two-way direction like video conferencing (Lakhal et al., 2021), meanwhile it also can be seen that's if this pandemic has the potential to produce various learning strategies that can be used by teachers to carry out their learning activities (Herwin Herwin et al., 2021).

1.3. Purpose of the Study

Various learning strategies are needed for VHS students, considering the VHS conditions that require students to understand and be able to practice. Especially in the Construction and Property Technology expertise program, the expertise program has many practical competencies that students must understand. The purpose of this study was to analyze the implementation of practical learning during the Covid-19 pandemic at state VHS in the Surakarta area. This analysis is important to obtain information on how the vocational learning process during the Covid-19 pandemic, especially in subjects that require a practicum. Another focus of the researchers is to find out whether the existing technology can replace practical activities to be implemented in schools.

2. Materials and Method

2.1. Research Model

This study used a qualitative approach with a transcendental phenomenology type. Transcendental phenomenology can provide a systematic approach to analyzing data about life experiences (Moerer-urdahl & Creswell, 2004). Transcendental phenomenology is useful for describing phenomena using experiences, perceptions, and opinions of participants (Cordes, 2014). Therefore, through the research approach used, very valid and measurable data will be obtained in order to describe learning activities in vocational schools during the COVID-19 pandemic.

2.2. Participant

This research was conducted at a VHS (Vocational High School) in Surakarta City, Central Java Province, Indonesia. The subjects of this study were VHS teachers who were selected by purposive or deliberate sampling technique.

2.3. Data Collection Tools

Data collection techniques used in this study were semi-structured interviews, documentation, and several points as outlined in the questionnaire. Meanwhile, the data collection instrument used was based on the data collection techniques, which was an interview guide consisting of three parts; the first part contained questions related to the lesson plan modified from (Jančič & Hus, 2019); the

second part consisted of the implementation of theoretical and practical learning both synchronously and asynchronously based on several literature reviews according to experts (Rahayu, 2020; Mulyanti et al., 2020); the third part contained questions on the use of media during learning activities in the era of the Covid-19 pandemic adopted from relevant studies (Eladl & Musawi, 2020; Hoerunnisa et al., 2019).

2.4. Data Collection Process

The data collection procedure consisted of two major steps. The first step was semi-structured interviews with informants as the main data collection technique to obtain information related to the implementation of learning strategies by VHS teachers during the Covid-19 pandemic. The second step was the use of questionnaires and documentation as supporting data. This is a form of triangulation of findings on interview activities.

2.5. Data Analysis

An in-depth descriptive analysis of the interview data supporting some of the findings of the questionnaire is the focus of this study. The data were analyzed using Miles & Huberman's model (Matthew B. Miles, 1994), which consists of three stages, including data reduction, data presentation, conclusions and verification. Data reduction is the stage of collecting all the information needed from the results of questionnaires, interviews, and documentation, from which the data is grouped. Data presentation is the stage of presenting the data needed in research where unnecessary data is not presented. Conclusion drawing and verification is the stage of explaining research data to draw conclusions based on the actual situation (Matthew B. Miles, 1994),(Pramana et al., 2021). Through the analytical technique used, it is hoped that it will be able to describe the implementation of learning during the Covid-19 pandemic.

3. Results and Discussion

3.1. Lesson Plans during the Covid-19 Pandemic

Distance learning (online learning) during this pandemic has provided many new experiences for teachers and students at VHS. The findings obtained are that the distance learning process has changed not only the way of learning but also the lesson plan. A lesson plan is important in the learning process. Without this instrument, the learning process is not focused. Through a well-organized and systematic lesson plan, the learning process will be organized, directed, and systematically structured. Implementing effective lesson plans is part of the quality of teachers' pedagogic competencies (Abadi & Ekawati, 2018). A lesson plan is even one of the main supports for Technological Pedagogical Content Knowledge (TPACK) (Valtonen et al., 2019), (Aktaş & Özmen, 2020).

Lesson plans developed by teachers always contain three main components: learning objectives, learning activities, and assessments. The objective component is the most important because it relates to the learning objectives to be achieved following the curriculum designed by the government. The second component is learning activities which include an introduction, core activities or material delivery, and closing. The last component is an assessment which is an important activity in learning (Herwin et al., 2019). The results of the assessment are very useful for improving the educational process (Retnawati et al., 2017).

The lesson plans used in direct learning and distance learning are different. Teachers must adapt to the current conditions. In schools, they may change the lesson plans set by the government. The lesson plans made by the teachers during this pandemic period are more about assignments. Based on the results of interviews with classroom teachers at VHS, there are differences in lesson plans for

direct learning and distance learning. In direct learning, practical activities are carried out in schools while, in distance learning, they are not carried out at school but assigned to students. In other schools, there are 2 different types of lesson plans, namely direct learning and distance learning lesson plans. Based on the interview, the school has not been allowed to carry out any face-to-face activities that are gathering people.

3.2. Implementation of Learning during the Covid-19 Pandemic

All the practical activities in VHS are now gone. Students carry out practical activities independently at their homes if they have adequate tools and materials, but if the tools and materials are only owned by the school, the students are only given learning videos as a substitute for the practicum, as conveyed by a teacher that VHS does not hold practical activities during the pandemic. The substitute is only videos from teachers. Because during the pandemic, students are not allowed to go to school unless they get permission from the government. Thus, students may practice in a limited way or even not practice at all because the materials and the tools used are not available (Dewi, 2020). This is emphasized in the teacher's statement that, if the practice can be done at home, students are asked to see the video sent by the teacher and then practice at home. If the practice uses tools that are not owned by students, they watch the video. The students' understanding when doing hands-on practice is different from when doing distance learning because of the availability of different practice tools between school and home (Amiti, 2020). The tools available at home are inadequate; even, students do not have large expensive tools or machines. Distance learning activities are also less than optimal due to limited internet connections in several regions in Indonesia (Dewantoro & Rachmawati, 2020). On the one hand, the interaction between students and teachers is very important in distance learning (Wang et al., 2018).

3.3. Utilization of Learning Media during the Covid-19 Pandemic

The presentation of learning material is important in learning activities. Due to different lesson plans, the implementation of distance learning and direct learning is different. Teachers must provide material to students so that it can be received well under any circumstances. Teachers can only use technology to deliver the material in distance learning. It must be realized that each learning material has a different purpose; therefore, the use of technology is also different according to the lesson plans prepared. The learning technology used includes Microsoft 365, Google Classroom, Zoom, YouTube, WhatsApp. Teachers use several applications or software to support distance learning on VHS synchronously and asynchronously. Asynchronously, the teacher uploads learning materials in the form of learning videos, PowerPoint texts, PDFs, and questions. The video material sent by the teacher is self-made. Initially, the teacher sent the video downloaded from YouTube, but the students did not understand it; finally, the teacher made his/her video. This is as stated by the teacher, "The learning videos are taken from YouTube. Sometimes, I make my own because some students understand better if the teacher explains. I teach construction and property business management. There is a weighting material. At first, I sent videos from YouTube, but the students did not understand. Finally, I made a video". The picture below is one of the materials that the teacher distributes to students. Learning takes place asynchronously because the teacher distributes material without direct interaction with the students.

After the teacher distributes teaching materials or videos, students are given assignments as the references that students have mastered the material provided by the teacher or not. To find out whether the students have carried out the practice or not, assignments are given and must be submitted. The task is given by the teacher following the material that has been studied. The teacher

feels this is the best step taken at this time to provide understanding to the students about practical learning even though the material that should be obtained can be absorbed more through direct activities at school.

Learning also takes place synchronously. Synchronous learning is done using video conferencing with Zoom Meeting. This online meeting is very useful for teachers and students, in addition to conveying material that needs direct explanation, as well as a means of getting to know each other. Zoom has an impact on increasing student performance in independent study, managing time, and increasing motivation (Fuady et al., 2021), (Syaharuddina et al., 2021). On average, students who join Zoom use their cell phones; some students can not join a full Zoom video conference because they have limited signal and need a lot of internet quota. Because of this, teachers do not do much synchronous learning, but the delivery of material relies more on e-books, video recordings, and WhatsApp groups. An example of an asynchronous learning situation through the Zoom application is presented in the following image:

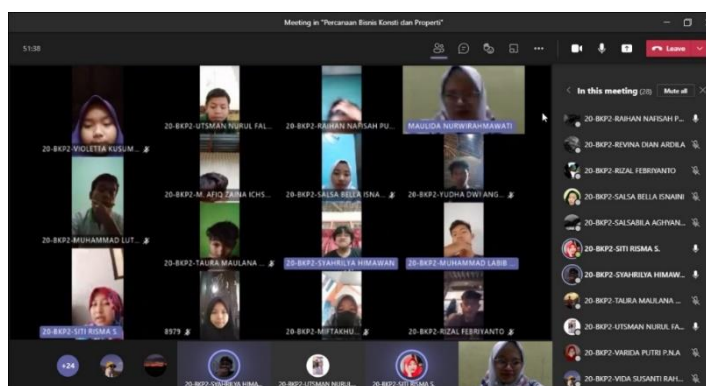


Figure 1. Zoom Media for Synchronous Learning

The teacher conveys the material using various synchronous and asynchronous methods. The use of Zoom to conduct video conferences is supported by WhatsApp Groups (student and teacher groups) to conduct indirect discussions. The WhatsApp application is very supportive of learning activities because almost all students use it as a communication tool and it is accessible by all people. The use of various applications and media, apart from being based on learning objectives, also aims to avoid boredom during distance learning.

In addition to platforms and applications that are commercially available, some VHCs develop their websites to support online learning. On the website, students and teachers can log in with the username and password generated by the website manager. An example of a website display for teachers is as follows.

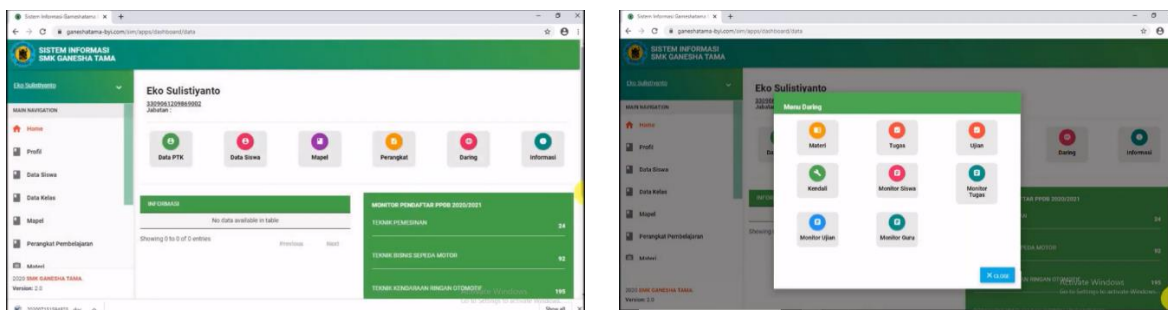


Figure 2. Website as a Learning Media

The website is equipped with PTK data which contains teacher personal data, student data, and the subject data; the contents of the subjects have been regulated by the deputy principal. Learning tools are used to upload lesson plans, curriculum, etc. The online menu contains materials, assignments, exams, controls, student monitors, assignment monitors, exam monitors, and teacher monitors. In this online menu, the source of the material is distributed by the teacher to the students. This application is also equipped with a discussion menu. For the VHS level, the significant difference felt by teachers when teaching online compared to direct learning is during practical activities. During practical learning, students cannot practice directly. This was conveyed by the teacher during the interview as follows:

“For VHS students, students cannot practice their knowledge directly. Meanwhile, VHS students can work directly after graduating from the VHS following the majors taken. For example, if a student of modeling design and building information for drawing floor plans does not have a laptop, he or she cannot operate the AutoCAD application. Meanwhile, Modeling and Building Information Design (DPIB) students must have AutoCAD drawing skills.”

3.4. Discussion

Learning activities need to be carefully planned so that the learning process runs smoothly and effectively. The lesson plan is realized in the form of a lesson plan. For implementing learning activities in Indonesia, lesson plans are an important guide for teaching. It is the design of a direct (face-to-face) learning activity for one or more meetings (Syharuddina et al., 2021). Without lesson plans, learning becomes undirected (Candra et al., 2020). The lesson plan components consist of school identity, subject identity, class/semester, subject matter, time allocation, learning objectives, basic competencies and indicators of competency achievement, learning materials, learning methods, learning media, learning resources, and learning steps (Abadi & Ekawati, 2018). The main components contained in the lesson plan are learning objectives, activities (learning steps), and assessment.

The Covid-19 pandemic has brought about a very significant change in social life. This change is also felt in education, especially VHS. They must conduct theoretical and practical learning at a distance, where learning takes place through the integration of technology in the form of online learning. The lesson plan during the current distance learning period is certainly different from direct learning. The findings in this study indicate the practical material in VHS could not be implemented like before the pandemic. The lesson plan for VHS in practical learning is replaced with assignments. There is no practice carried out in schools considering that they have not been opened due to the Covid-19 pandemic. This situation should be a concern for the government.

Based on the results of the study, online learning by teachers during the Covid-19 pandemic was guided by a lesson plan that was changed from practice to providing material with technology and assignments only. However, the research findings show that the practical activities of students in the Construction and Property Technology expertise program in Indonesia cannot be completely replaced by technology. The practical learning method is a way of presenting lessons; students do experiments on the material being studied independently (Suryaningsih, 2017). Practical activities require complex tools and materials, and some are only owned by schools. Few students have these facilities. How can students understand and carry out practice if they only see learning videos? Practical activities should be implemented to achieve the competencies that have been formulated in the curriculum. When a practicum is held, students can research, describe data, examine data, use tools and materials, plan practicum, discuss practicum results, and ask questions (Prestridge, 2012). According to the researcher, the best solution is to continue to practice in schools by implementing strict health protocols. If this condition continues for too long, the goal that VHS graduates are ready to work in the business and industrial world will not be achieved.

Learning activities in the form of theoretical material on VHS using technology can run synchronously or asynchronously. Presentation of learning materials is an important part of learning activities. Media used by teachers include Microsoft 365, Google Classroom, Zoom, YouTube, and WhatsApp (Syaharuddina et al., 2021),(Taipale & Farinosi, 2018),(Inan & Lowther, 2010). Microsoft 365 and Google Classroom are used to share learning materials and provide direct questions or collect questions given by the teacher in the application or website. In addition, the practical learning videos are also uploaded on YouTube. YouTube is one example of a media that allows the formation of social relationships that revolve around uploaded videos (Jackman, 2019). This media provides thousands of videos for entertainment, news, music, movies, religion, learning, and many more. The YouTube video page can provide endless opportunities to enhance distance learning by viewing thousands of videos (A. Buzzetto-More, 2014). However, students sometimes do not understand the videos that are already available on YouTube, so the teacher must take the initiative to make their videos. Besides using the available videos, the teacher can also create his/her videos to help the students achieve learning goals and objectives; the videos can also be used to demonstrate practical lessons, concepts, procedures, and methods, which can be very useful for all students, especially those who learn engineering or science-related courses in technical university education (Hapsari et al., 2019),(Yip et al., 2019). With the videos made by the teacher, students can understand the material better because the language used is simpler and the students are used to the way their teacher conveys learning.

In distance learning, the teacher combines asynchronous learning with synchronous learning to make variations in the delivery of learning. Synchronous learning is done via Zoom to meet the students, deliver material, ask questions, and discuss practical learning materials. Zoom is a video conferencing tool that allows individuals to make high-speed video calls with features that can help simulate everything (Cohen, 2021), such as group chat, private chat, or file sharing. With Zoom, students and teachers can also get to know each other better than just using synchronous learning media. Zoom allows for synchronous interaction between the teacher and students (Alfadda & Mahdi, 2021). It can reduce the feelings of social isolation and foster a sense of community among students (Alfadda & Mahdi, 2021),(Lowenthal & West, 2020). Students judge the lesson to be more effective, interesting, and easy to understand. In addition, they have a better impression of using Zoom than using other platforms (Schurgers & Diego, 2021). The advantages of Zoom were also reported in a study (Rahayu, 2020),(Syaharuddina et al., 2021) where more than 60% of students surveyed indicated that they could easily communicate through writing or speaking using Zoom. Other advantages include effective interaction during learning using Zoom Video conferencing (Mpungose, 2021), the ability of

the teacher to give control to students, the availability of annotation tools such as lines and arrows, and clear audio and stable connections (Dharma et al., 2017).

WhatsApp is also used for communication, discussion, and interaction between teachers and students. This communication and discussion are useful for strengthening students' understanding of the learning material. Since then, WhatsApp has become very popular due to its usability and versatility (Sarwat et al., 2021). The use of WhatsApp is common for Indonesian citizens. Most people, from teenagers to the elderly, use this app because it has various easy-to-use features and allows quick response for the teacher or students. The features available on WhatsApp are groups, text messages, audio messages, video calls, etc. (Munir Rita; Afrinursalim, Hanif, 2021). WhatsApp provides sending messages and making calls on multiple devices at once, for example, on smartphones, computers, and laptops. WhatsApp is not an application that is intentionally used for education, but, during this Covid-19 pandemic, many teachers use it for a virtual classroom because (1) it is easy to use, (2) consumes fewer mobile data, and (3) has many useful features such as groups, audio messages, video calls, and voice notes (Taipale & Farinosi, 2018). In recent decades, the use of WhatsApp in the classroom has resulted in short informing administrations as a learning media (La Hanisi et al., 2018). In vocational learning, teachers use this app to discuss, remind students about tomorrow's learning, and remind them to submit assignments.

Although technology has developed, there are still obstacles to its use. Some of the basic problems include communication tools that are not fully owned by students in Indonesia, especially elementary and junior high school students. Most high school students have a communication tool in the form of mobile phones, and some have laptops. During the online learning process, teachers are faced with technical problems, including some students who do not have mobile phones or laptops (Shatri, 2020),(Rasmitadila et al., 2020). Another study obtained data in the form of student smartphone ownership in two high schools in Central Java Province, Indonesia. It is known that 94.60% of students have smartphones as a technology device that helps them in completing various tasks (Qodr et al., 2021). There are still 5.4% of students who do not have a smartphone. Another problem is in the form of signals in certain areas, especially rural areas which have no signal yet. The important factors for the smooth learning process are a good internet network, sufficient data packages, and ownership of a mobile phone or laptop for each student (Rasmitadila et al., 2020). Many educational institutions at various levels are not ready to implement distance learning (Rusdin, 2018). This problem is also felt by VHS. Moreover, VHS students must do more practical work directly in addition to learning theory. In addition, Indonesia has other aspects that must be considered such as the condition of the internet network in terms of quality and cost (Rahiem, 2020). This problem occurs not only in Indonesia but also in other developing countries such as the Philippines. Another problem is that not all students have laptops or PCs at home. When learning at school, students use the provided PCs in the computer laboratory. This is certainly the biggest obstacle in carrying out practical tasks such as sketching buildings through the AutoCAD application. In an interview conducted by one of the VHS teachers, the teacher said that some VHS students only relied on mobile phones for distance learning. Even though some tasks must be completed using a laptop or PC, some of them do not have one.

4. Conclusion and Suggestion

Teachers and schools as part of education must provide alternative education for students in carrying out the educational process and achieving their goals during the Covid-19 Pandemic. The research findings show that the lesson plans used are now changed to assignments. Every teacher has his/her way of planning lessons. Online learning is the main choice for teachers to convey competence to their students. Distance learning is conducted by vocational teachers using various media either

synchronously, asynchronously, or a combination of both. Another finding shows that the practical material cannot be fully delivered in this pandemic because students do not practice. This is the impact of the sudden transition from direct learning to online learning. As practical learning is replaced by watching videos only, the material is not fully absorbed by the students, resulting in a decrease in their competence when they graduate. Therefore, schools and the government should pay attention to immediately overcoming the pandemic so that learning activities can be carried out optimally again.

Acknowledgement

The author would like to thank Sebelas Maret University which has provided Study Scholarships in the Master of Educational Technology program at the Faculty of Teacher Training and Education, Sebelas Maret University. Thanks to Dr. Roemintoyo and Dr. Triana Rejekiningsih for their advice. We also thank VHS teachers in the Surakarta City area, Central Java, Indonesia for their willingness to be involved as subjects in this study.

References

- A. Buzzetto-More, N. (2014). An Examination of Undergraduate Student's Perceptions and Predilections of the Use of YouTube in the Teaching and Learning Process. *Interdisciplinary Journal of E-Skills and Lifelong Learning*, 10(1), 17–13. <https://doi.org/10.28945/1965>
- Abadi, A., & Ekawati, R. (2018). Redesigning preservice mathematics teacher's lesson plan by using productive pedagogies framework. *Journal of Engineering Science and Technology*, 13(5), 1376–1383. Retrieved from https://jestec.taylors.edu.my/Vol%2013%20issue%205%20May%202018/13_5_18.pdf
- Aktaş, I., & Özmen, H. (2020). Investigating the impact of TPACK development course on pre-service science teachers' performances. *Asia Pacific Education Review*, 21, 667–682. <https://doi.org/10.1007/s12564-020-09653-x>
- Al-Arimi, A. M. A.-K. (2015). Distance Learning. *Procedia - Social and Behavioral Sciences*, 152, 82–88. <https://doi.org/10.1016/j.sbspro.2014.09.159>
- Alfadda, H. A., & Mahdi, H. S. (2021). Measuring Students' Use of Zoom Application in Language Course Based on the Technology Acceptance Model (TAM). *Journal of Psycholinguistic Research*, 50(4), 883–900. <https://doi.org/10.1007/s10936-020-09752-1>
- Amiti, F. (2020). SYNCHRONOUS AND ASYNCHRONOUS E-LEARNING. *European Journal of Open Education and E-Learning Studies*, 5(2), 60–70. <https://doi.org/10.46827/ejoe.v5i2.3313>
- Asmara, A., & Wu, M.-C. (2020). An Analytical Study on The Effective Approaches to Facilitate Higher Education Cooperate with Industry: Based on Faculty Members Perspective. *TEM Journal*, 9(4), 1721–1731. <https://doi.org/10.18421/TEM94-53>
- Baloch, S., Baloch, M. A., Zheng, T., & Pei, X. (2020). The Coronavirus Disease 2019 (COVID-19) Pandemic. *The Tohoku Journal of Experimental Medicine*, 250(4), 271–278. <https://doi.org/10.1620/tjem.250.271>
- Batsila, A. (2020). Inter-Learner Communication and Collaborative Learning as Quality Criteria of Distance Vocational Education and Training. *European Journal of Open, Distance and E-Learning*, 22(2), 98–112. <https://doi.org/10.2478/eurodl-2019-0013>
- Berezovska, L. I., Kondratska, G. D., Zarytska, A. A., Volkova, K. S., & Matsevko, T. M. (2020). Introduction of New Forms of Education in Modern Higher and Vocational Education and Training. *International Journal of Higher Education*, 9(7), 107. <https://doi.org/10.5430/ijhe.v9n7p107>

- Odiana, F., Roemintoyo, R. & Rejekiningsih, T., (2022). Overview of learning activities in vocational high schools during the covid-19 pandemic. *World Journal on Educational Technology: Current Issues*, 14(3), 604-618. <https://doi.org/10.18844/wjet.v14i3.5994>
- Budiarto, M. K., Rejekiningsih, T., & Sudiyanto, S. (2021). Students' opinions on the need for interactive multimedia development for entrepreneurship learning. *International Journal of Evaluation and Research in Education (IJERE)*, 10(4), 1290–1297. <https://doi.org/http://doi.org/10.11591/ijere.v10i4.21411>
- Candra, P., Soepriyanto, Y., & Praherdhiono, H. (2020). Pedagogical Knowledge (PK) Guru Dalam Pengembangan dan Implementasi Rencana Pembelajaran. *JKTP: Jurnal Kajian Teknologi Pendidikan*. <https://doi.org/10.17977/um038v3i22020p166>
- Cohen, J. (2021). Teaching effectively with Zoom: A practical guide to engage your students and help them learn. *Journal of Public Affairs Education*, 27(2), 260–262. <https://doi.org/10.1080/15236803.2020.1834676>
- Cordes, M. L. (2014). *A Transcendental Phenomenological Study of Developmental Math*. Liberty University.
- Dewantoro, A., & Rachmawati, I. (2020). Analysis of Evaluation and Exploratory Studies on Student's Resilience of Online Learning during Pandemic of Covid-19. *KONSELI : Jurnal Bimbingan Dan Konseling (E-Journal)*, 7(2), 155–162. <https://doi.org/10.24042/kons.v7i2.7422>
- Dewi, W. A. F. (2020). Dampak COVID-19 terhadap Implementasi Pembelajaran Daring di Sekolah Dasar. *EDUKATIF : JURNAL ILMU PENDIDIKAN*, 2(1), 55–61. <https://doi.org/10.31004/edukatif.v2i1.89>
- Dharma, H. R. C., Asmarani, D., & Dewi, U. P. (2017). Basic Japanese Grammar and Conversation e-learning through Skype and Zoom Application. *Procedia Computer Science*, 116, 267–273. <https://doi.org/10.1016/j.procs.2017.10.055>
- Eladl, A., & Musawi, A. Al. (2020). Effects of students attitudes towards using E- books on their self-efficacy and academic motivation. *European Journal of Educational Research*, 9(3), 1167–1176. <https://doi.org/10.12973/EU-JER.9.3.1167>
- Erol, K., & Danyal, T. (2020). Analysis of distance education activities conducted during COVID-19 pandemic. *Educational Research and Reviews*, 15(9), 536–543. <https://doi.org/10.5897/ERR2020.4033>
- Fauzi, J. A., Suswanto, H., & Wibawa, A. P. (2020). Pengaruh Aspek-Aspek Tuntutan Industri terhadap Uji Kompetensi Keahlian di Sekolah Menengah Kejuruan. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*. <https://doi.org/10.17977/jptpp.v5i1.13147>
- Fuady, I., Sutarjo, M. A. S., & Ernawati, E. (2021). Analysis of Students' Perceptions of Online Learning Media During the Covid-19 Pandemic (Study of E-learning Media: Zoom, Google Meet, Google Classroom, and LMS). *Randwick International of Social Science Journal*, 2(1), 51–56. <https://doi.org/10.47175/rissj.v2i1.177>
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*. <https://doi.org/10.21890/ijres.23596>
- Handayani, T., Maulida, E., & Sugiyanta, L. (2020). Blended Learning Implementation and Impact in Vocational Schools. *Teknodika*, 18(2), 146. <https://doi.org/10.20961/teknodika.v18i2.42032>
- Hapsari, A. S., Hanif, M., Gunarhadi, & Roemintoyo. (2019). Motion Graphic Animation Videos to Improve the Learning Outcomes of Elementary School Students. *European Journal of Educational Research*, 8(4), 1245–1255. <https://doi.org/10.12973/eu-jer.8.4.1245>
- Herwin, H., Tenriawaru, A., & Fane, A. (2019). Math elementary school exam analysis based on the Rasch model. *Jurnal Prima Edukasia*, 7(2), 106–113. <https://doi.org/10.21831/jpe.v7i2.24450>
- Herwin Herwin, Hastomo, A., Saptono, B., Ardiansyah, A. R., & Wibowo, S. E. (2021). How elementary school teachers organized online learning during the Covid-19 Pandemic? *World Journal on Educational Technology: Current Issues*, 13(3), 437–449. <https://doi.org/10.18844/wjet.v13i3.5952>
- Hoerunnisa, A., Suryani, N., & Efendi, A. (2019). THE EFFECTIVENESS OF THE USE OF E-LEARNING IN MULTIMEDIA CLASSES TO IMPROVE VOCATIONAL STUDENTS' LEARNING ACHIEVEMENT AND MOTIVATION. *Kwangsan: Jurnal Teknologi Pendidikan*, 7(2), 123. <https://doi.org/10.31800/jtp.kw.v7n2.p123--137>

- Odiana, F., Roemintoyo, R. & Rejekiningsih, T., (2022). Overview of learning activities in vocational high schools during the covid-19 pandemic. *World Journal on Educational Technology: Current Issues*. 14(3), 604-618. <https://doi.org/10.18844/wiet.v14i3.5994>
- Inan, F. A., & Lowther, D. L. (2010). Laptops in the K-12 classrooms: Exploring factors impacting instructional use. *Computers & Education*, 55(3), 937–944. <https://doi.org/10.1016/j.compedu.2010.04.004>
- Jackman, W. M. (2019). YouTube Usage in the University Classroom: An Argument for its Pedagogical Benefits. *International Journal of Emerging Technologies in Learning (IJET)*, 14(09), 157. <https://doi.org/10.3991/ijet.v14i09.10475>
- Jailani, M. S., Sutrisno, S., & Siddik, M. M. (2020). The Impact of Online Learning Policy during the Covid-19 Pandemic: An Analysis of Islamic Education. *INNOVATIO: Journal for Religious Innovation Studies*. <https://doi.org/10.30631/innovatio.v20i2.114>
- Jamaludin, S., Azmir, N. A., Mohamad Ayob, A. F., & Zainal, N. (2020). COVID-19 exit strategy: Transitioning towards a new normal. *Annals of Medicine and Surgery*, 59, 165–170. <https://doi.org/10.1016/j.amsu.2020.09.046>
- Jančič, P., & Hus, V. (2019). Representation of teaching strategies based on constructivism in social studies. *International Journal of Innovation and Learning*, 25(1), 64. <https://doi.org/10.1504/IJIL.2019.096535>
- Spektrum Keahlian Sekolah Menengah Kejuruan (SMK) / Madrasah Aliyah Kejuruan (MAK), Pub. L. No. 06/D.D5/KK/2018 (2018).
- La Hanisi, A., Risdiany, R., Dwi Utami, Y., & Sulisworo, D. (2018). The use of WhatsApp in collaborative learning to improve English teaching and learning process. *International Journal of Research Studies in Educational Technology*, 7(1), 29–35. <https://doi.org/10.5861/ijrset.2018.3004>
- Lakhal, S., Mukamurera, J., Bédard, M., Heilporn, G., & Chauret, M. (2021). Students and instructors perspective on blended synchronous learning in a Canadian graduate program. *Journal of Computer Assisted Learning*, 37(5), 1383–1396. <https://doi.org/10.1111/jcal.12578>
- Lowenthal, P. R., & West, R. E. (2020). *Thinking Beyond Zoom: Using Asynchronous Video to Maintain Connection and Engagement During the COVID-19 Pandemic*. 28, 383–391. Retrieved from: <https://www.learntechlib.org/primary/p/216192/>
- Matthew B. Miles, A. M. H. (1994). An Expanded Sourcebook "Qualitative Data Analysis Second Edition. In *SAGE Publications*.
- Pembelajaran secara Daring dan Bekerja dari Rumah dalam Rangka Pencegahan Penyebaran Corona Virus Disease (COVID-19), Pub. L. No. 36962/MPK.A/HK/2020 (2020).
- Moerer-urdahl, T., & Creswell, J. (2004). Using Transcendental Phenomenology to Explore the “Ripple Effect” in a Leadership Mentoring Program. *International Journal of Qualitative Methods*, 3(2), 1–28. Retrieved from: <https://journals.sagepub.com/doi/10.1177/160940690400300202>
- Motamedi, V. (2019). The promises of presentational technology for teaching and learning. *Journal of Education and Learning (EduLearn)*, 13(3), 416–419. <https://doi.org/10.11591/edulearn.v13i3.13175>
- Mpungose, C. B. (2021). Students’ Reflections on the Use of the Zoom Video Conferencing Technology for Online Learning at a South African University. *International Journal of African Higher Education*, 8(1), 159–178. <https://doi.org/10.6017/ijahe.v8i1.13371>
- Mulyanti, B., Purnama, W., & Pawianto, R. E. (2020). Distance learning in vocational high schools during the covid-19 pandemic in West Java province, Indonesia. *Indonesian Journal of Science and Technology*, 5(2), 271–282. <https://doi.org/10.17509/ijost.v5i2.24640>
- Munir Rita; Afrinursalim, Hanif, S. E. (2021). Students’ Views on the Use of WhatsApp during Covid-19 Pandemic: A Study at IAIN Batusangkar. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, 5(Indonesian Journal of English Language Teaching and Applied Linguistics, 5(2), 2021), 323–334. <http://dx.doi.org/10.21093/ijeltal.v5i2.740>

- Odiana, F., Roemintoyo, R. & Rejekiningsih, T., (2022). Overview of learning activities in vocational high schools during the covid-19 pandemic. *World Journal on Educational Technology: Current Issues*. 14(3), 604-618. <https://doi.org/10.18844/wjet.v14i3.5994>
- Owais, A. K., Alabidi, S. M., Hatamleh, Z. M., & Hussein, E. T. (2020). Technical and Vocational Education and Training in the UAE. *International Journal of Emerging Technologies in Learning (IJET)*, 15(13), 264. <https://doi.org/10.3991/ijet.v15i13.13801>
- Polat, Z., Uzmanoglu, S., İsgören, N. Ç., Çınar, A., Tektaş, N., Oral, B., Büyükpehlivan, G., Ulusman, L., & Öznaz, D. (2010). Internship education analysis of vocational school students. *Procedia - Social and Behavioral Sciences*, 2(2), 3452–3456. <https://doi.org/10.1016/j.sbspro.2010.03.533>
- Pramana, C., Susanti, R., Ernawati, K., Darmawan, I. P. A., Miftah, M. Z., Lestyowati, J., Werdiningsih, R., & Ramadhani, R. (2021). Distance Learning In Primary Schools During The Covid-19 Pandemic In Indonesia: Challenges, Solutions, And Projections. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(4), 263–270. <https://doi.org/10.17762/turcomat.v12i4.502>
- Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices. *Computers & Education*, 58(1), 449–458. <https://doi.org/10.1016/j.compedu.2011.08.028>
- Qodr, T. S., Efendi, A., & Musadad, A. A. (2021). Opportunities for Using Smartphones in the Digital Era to Facilitate Students in Learning Sociology in High Schools. *Journal of Education Technology*, 5(2), 263–271. <https://doi.org/10.23887/jet.v5i2.34806>
- Rahayu, D. (2020). *Synchronous Zoom Web Conference System : An Exploratory Study on Students ' E -Learning Experience*. 5(1), 68–79. <https://doi.org/10.22236/JER>
- Rahiem, M. D. H. (2020). Technological Barriers and Challenges in the Use of ICT during the COVID-19 Emergency Remote Learning. *Universal Journal of Educational Research*, 8(11B), 6124–6133. <https://doi.org/10.13189/ujer.2020.082248>
- Rasmitadila, Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The perceptions of primary school teachers of online learning during the covid-19 pandemic period: A case study in Indonesia. *Journal of Ethnic and Cultural Studies*, 7(2), 90–109. <https://doi.org/10.29333/ejecs/388>
- Retnawati, H., Kartowagiran, B., Arlinwibowo, J., & Sulistyaningsih, E. (2017). Why are the Mathematics National Examination Items Difficult and What Is Teachers ' Strategy to Overcome It? *International Journal of Instruction*, 10(3), 257–276. <https://doi.org/10.12973/iji.2017.10317a>
- Revilda, E., Hadi, N., & Purwasih, J. H. G. (2021). Dampak Belajar Dari Rumah. *NATURALISTIC : Jurnal Kajian Penelitian Pendidikan Dan Pembelajaran*. <https://doi.org/10.35568/naturalistic.v5i2.1133>
- Roemintoyo, R., & Budiarto, M. K. (2021). Flipbook as Innovation of Digital Learning Media: Preparing Education for Facing and Facilitating 21st Century Learning. *Journal of Education Technology*, 5(1), 8. <https://doi.org/10.23887/jet.v5i1.32362>
- Rönnlund, M., & Rosvall, P.-Å. (2021). Vocational students' experiences of power relations during periods of workplace learning – a means for citizenship learning. *Journal of Education and Work*, 34(4), 558–571. <https://doi.org/10.1080/13639080.2021.1946493>
- Rusdin, N. M. (2018). Teachers' Readiness in Implementing 21st Century Learning. *International Journal of Academic Research in Business and Social Sciences*, 8(4), 1293–1306. <https://doi.org/10.6007/IJARBS/v8-i4/4270>
- Sarwat, S., Kaleemullah, S., Ullah, N., & Bhuttah, T. M. (2021). *Effect of WhatsApp on English Language Academic Writing Skill : A Gender Based Study*. 7(5). <https://doi.org/10.5281/zenodo.4912367>
- Schneider, S. L., & Council, M. L. (2021). Distance learning in the era of COVID-19. In *Archives of Dermatological Research* (Vol. 313, Issue 5, pp. 389–390). <https://doi.org/10.1007/s00403-020-02088-9>
- Schurgers, P. C., & Diego, S. (2021). Introducing Communications to High School Students by Leveraging Zoom as a Communications Platform Introducing Communications to High School Students by Leveraging Zoom as a

Odiana, F., Roemintoyo, R. & Rejekiingsih, T., (2022). Overview of learning activities in vocational high schools during the covid-19 pandemic. *World Journal on Educational Technology: Current Issues*. 14(3), 604-618. <https://doi.org/10.18844/wjet.v14i3.5994>

Communications Platform Introduction. *Asee Annual Conference*, 1–17. Retrieved from: <https://strategy.asee.org/introducing-communications-to-high-school-students-by-leveraging-zoom-as-a-communications-platform>

Shatri, Z. G. (2020). Advantages and disadvantages of using information technology in learning process of students. *Journal of Turkish Science Education*, 17(3), 420–428. <https://doi.org/10.36681/tused.2020.36>

Suryaningsih, Y. (2017). Pembelajaran Berbasis Praktikum Sebagai Sarana Siswa untuk Berlatih Menerapkan Keterampilan Proses Sains Dalam Materi Biologi. *Jurnal Bio Educatio*, 2, 49–57. <http://dx.doi.org/10.31949/be.v2i2.759>

Syahrudina, S., Husain, H., Herianto, H., & Jusmiana, A. (2021). The effectiveness of advance organiser learning model assisted by Zoom Meeting application. *Cypriot Journal of Educational Sciences*, 16(3), 952–966. <https://doi.org/10.18844/cjes.v16i3.5769>

Taipale, S., & Farinosi, M. (2018). The big meaning of small messages: The use of WhatsApp in intergenerational family communication. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics): Vol. 10926 LNCS*. Springer International Publishing. https://doi.org/10.1007/978-3-319-92034-4_40

Titan, Ferdianto, Desak, G. F. P., & Lena. (2017). A comparative study of teaching styles in online learning environment. *Proceedings of 2017 International Conference on Information Management and Technology, ICIMTech 2017*, 25–30. <https://doi.org/10.1109/ICIMTech.2017.8273505>

Toquero, C. M. (2020). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Research*, 5(4), em0063. <https://doi.org/10.29333/pr/7947>

Triyanto, & Rejekiingsih, T. (2021). Building Tolerance Character for Students in the Digital Era. *International Conference on Character Education*, 524, 58–63. <https://doi.org/10.2991/assehr.k.210204.008>

Utomo, M. N. Y., Suryanto, M., & Saddhono, K. (2020). Tools and Strategy for Distance Learning to Respond COVID-19 Pandemic in Indonesia. *Ingénierie Des Systèmes d'Information*, 25(3), 383–390. <https://doi.org/10.18280/isi.250314>

Valtonen, T., Sointu, E., Kukkonen, J., Mäkitalo, K., Hoang, N., Häkkinen, P., Järvelä, S., Näykki, P., Virtanen, A., Pöntinen, S., Kostiaainen, E., & Tondeur, J. (2019). Examining pre-service teachers' Technological Pedagogical Content Knowledge as evolving knowledge domains: A longitudinal approach. *Journal of Computer Assisted Learning*, 35(4), 491–502. <https://doi.org/10.1111/jcal.12353>

Wang, S., Minku, L. L., & Yao, X. (2018). A Systematic Study of Online Class Imbalance Learning with Concept Drift. *IEEE Transactions on Neural Networks and Learning Systems*, 29(10), 4802–4821. <https://doi.org/10.1109/TNNLS.2017.2771290>

Yip, J., Wong, S.-H., Yick, K.-L., Chan, K., & Wong, K.-H. (2019). Improving quality of teaching and learning in classes by using augmented reality video. *Computers & Education*, 128, 88–101. <https://doi.org/10.1016/j.compedu.2018.09.014>