

# Learning in Vocational Education During the Covid 19 Outbreak: A Systematic Review and Meta- Analysis

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## ABSTRACT

The article aims to look at the time of the covid-19 outbreak, innovative learning models that can be applied to vocational education. The meta-analysis in this study uses the PRISMA method. There are 50 articles reviewed from 2020-21 published in international conferences and journals. Article collection is done in DOAJ, ProQuest, and ScienceDirect. The findings showed that the learning model in vocational education that uses blended learning is more widely used. There has been a decrease in the number of articles published in the range of 2020 to 2021. One of the main factors affecting learning during the covid-19 outbreak is the limited number of students accessing the internet, especially students who are outside the city.

**Keywords:** *Learning in Vocational Education, Meta-Analysis, PRISMA Method*

## 1. INTRODUCTION

Education has a great influence on advancing the welfare of people's lives [1]. The challenges that will be faced in the world of work and the readiness of students to be able to compete require well-organized learning so that learning objectives are met [2]. The progress of the industrial revolution 4.0 [3] which regulates all work carried out robotically is a challenge for teachers so that students can take part in the progress of the industrial revolution [4]. Vocational education is teaching that plans students to be able to work in certain fields [5]. Students must master their field competencies to be able to work in the world of work following the ultimate goal of vocational education.

The world of education is in crisis due to the COVID-19 virus [6]. The learning process must continue even though there is a pandemic. A learning model is a form of planning so that the learning experience can be managed properly [7]. During the COVID-19 outbreak, the learning process cannot be applied as before the outbreak. The learning process turned into online learning because it couldn't be done as usual [8]. The Indonesian government enforced this

to stop the spread of the COVID-19 virus and was directed to online learning. In addition, educators must design appropriate learning models for students even though they are studying at home [9]. Parents play a big role in this, so the learning process at home is carried out well by their children.

The impact of online learning cause causes boredom, lack of enthusiasm, and students often fall asleep. During this pandemic, a lot of research has been done on innovative learning models. Combining online and offline classes is a type of blended learning [10]. Another electronic-based learning is the use of E-learning [11]. The transformation of education from conventional to digital has a significant influence on the use of e-learning. In e-learning, there is a platform for inserting videos, discussing or asking questions, and submitting assignments. Thus, learning can be done without any time limit.

To train students' skills and conformity with the theory obtained, practical learning is needed. The use of virtual laboratories [12] can be applied during this pandemic. Students will be greatly helped by the existence of a virtual laboratory because it can be done at home.

During this pandemic, support from the government is needed for vocational education [13]. Students need internet availability to access online learning. With current technological developments, online learning can be done anywhere, stopping the spread of the COVID-19 virus, and learning can be made more fun by utilizing technology.

The basis of this research is to see what learning model is most appropriate for learning during a pandemic in vocational education. Quality learning in vocational education and the findings of improving learning outcomes during the outbreak can be used as a reference by teachers in using innovative learning models.

**2. METHOD**

Through the "PRISMA" method, articles are organized into a systematic literature review. Articles were collected from 3 databases (ScienceDirect, DOAJ, and ProQuest) and other sources. In synthesizing various studies, a systematic review [14] is needed in presenting comprehensive and balanced facts. Articles were collected from 2020 to 2021 with

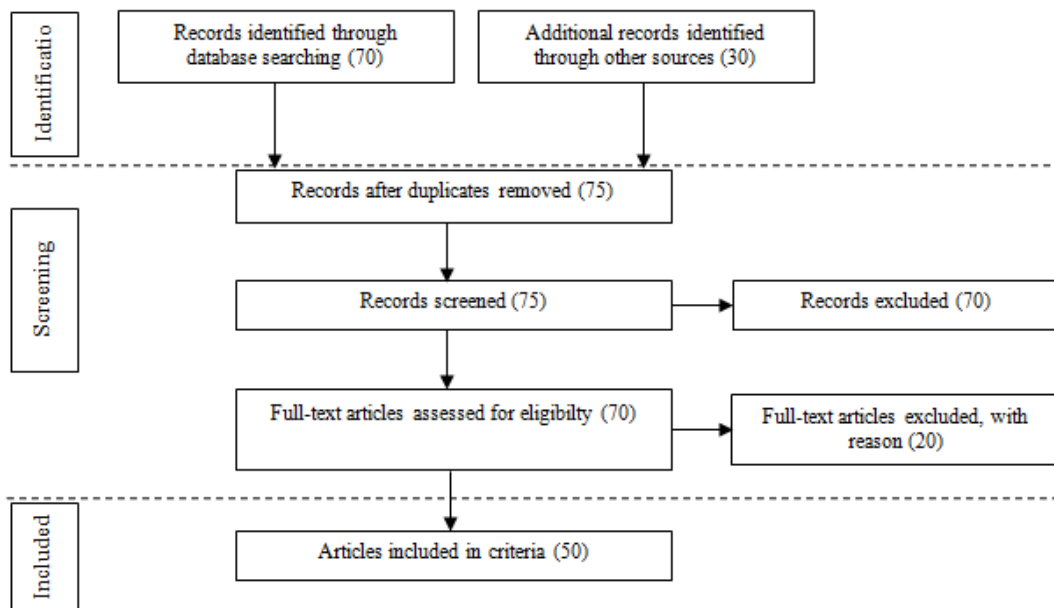
the vocational education, COVID-19, and online learning keywords. Articles were sorted using the Mendeley app and 25 articles were removed due to multiple effects.

Then, the articles were re-filtered using the inclusion and exclusion criteria as shown in Table 1. The articles in the inclusion criteria were continued with the analysis of the "PRISMA" method.

**Table 1.** Decision prerequisite

No.	Inclusion	Exclusion
1.	English	Not English
2.	Conferences and Journals (International)	Books, dissertation, theses
3.	Year 2020-2021	Before 2020
4.	Online learning in vocational education	In addition to the inclusion criteria
5.	Learning models in vocational education	In addition to the inclusion criteria

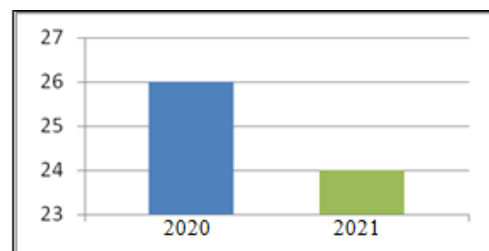
As shown in Fig 1, there are 50 articles analyzed using the PRISMA method.



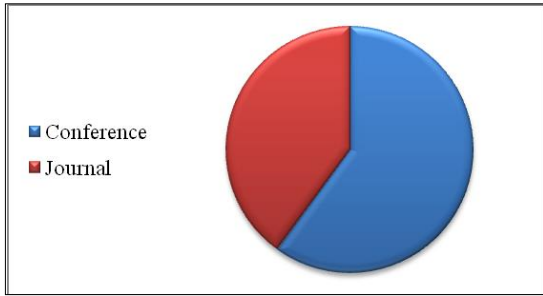
**Figure 1.** PRISMA method [15]

**3. RESULTS AND DISCUSSION**

There were 26 articles published in 2020 (52%) and 24 articles in 2021 (48%) as shown in Fig 2. Publications in international journals are around 40% and publications at international conferences are around 60% as shown in Fig 3.

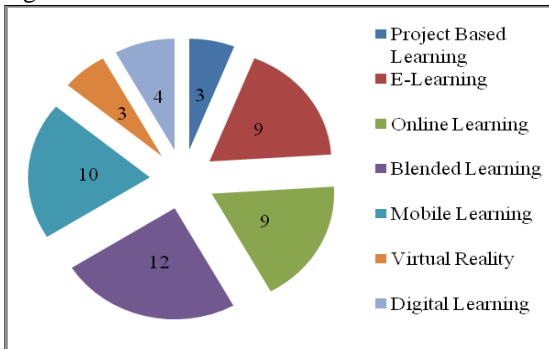


**Figure 2** Number of Publications



**Figure 3.** Place of publication

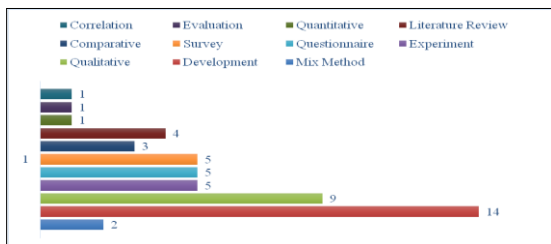
The distribution of articles based on the learning model used: Project Based Learning [16-18], E-Learning [19-27], Online Learning [28-36], Blended Learning[37-48], Mobile Learning [49-58], Virtual Reality [59-61], Digital Learning [62-65] as shown in Fig 4.



**Figure 4** Learning model

The findings of the article are based on the method, obtained:

- Quantitative [39], Evaluation [46], Correlation [42]
- Mix Method [44][49]
- Experiment [16][17][38][50][52]
- Survey [28][29][47][51][57]
- Comparative [24][37][54]
- Questionnaire [19][21][22][23][33]
- Literature review [25][35][41][56]
- Qualitative [26][30][31-32][34][36][58][60][65]
- Development [18][20][27][40][43][45][48][53][55][59]61 -82]



**Figure 5.** Method used

The learning model in vocational education is shown in Figure 4, the most frequently used is blended learning (12 articles). The merging of these 2 main elements is carried out in blended learning (face to face and online) [66].

Increasing the effectiveness of learning through blended learning will be achieved with an innovative and interesting learning model [67]. Student-centered is the core of the blended learning model. Students will get free access to explore learning materials and achieve high learning outcomes.

Learning competencies will be fulfilled by using blended learning properly. Learning during a pandemic using blended learning is more efficient and effective. Educators are required to master technology during this pandemic to support learning using blended learning. In the era of revolution 4.0, the use of technology [68] in learning is very good, especially with the blended learning method. Improved skills in blended learning are useful in facing the industrial era 4.0 [3]. Student motivation in learning can also increase.

**4. CONCLUSION**

The findings reveal that the use of learning models during an outbreak shows better results with blended learning. Students' skills in practice can be fulfilled with this blended learning model. Setting the right proportion between face-to-face and online must be appropriate in order to achieve the desired competencies in vocational education.

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