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## Collaborative online learning: implementation of vocational alignment in accordance with the industry's needs

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### ABSTRACT

The current acceleration of digital transformation requires the adaptability of schools, teachers, students, and school partner institutions, namely the industry. This study aims to reveal the important components and indicators in the online collaborative learning process as part of a vocational alignment program. This study uses a qualitative case study approach. The research model uses the Miles & Huberman interactive model. The participants of this research are productive teachers, alumni, and instructors from the industry. This research was conducted in Yogyakarta. Data analysis was carried out with the help of Atlas.ti software version 9. The validity of the data used triangulation of source. The results of this study show main components that must exist in collaborative online learning, namely pedagogical learning environments, instructions, digital tools, applied methods, and the development of critical thinking. Recommendations for this study are given to all teachers who teach in vocational high schools and all instructors as partner schools to improve the quality of learning aligned with the advancement of technology. So that they can take advantage of technology in learning through online learning collaborations.

**Keywords:** collaboration, digital transformation, industry, online learning, vocational school

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### INTRODUCTION

Vocational high school (VHS) is an educational unit that prepares graduates who are skilled, competent, and strongly independent. These goals can be established through programs, activities, and synchronous learning between VHS and industry needs. The competition for VHS graduates is the drive to be competent individuals (Cahyono et al., 2021). Competence can be built through the development of materials by adapting the development of science and technology in the industry. The competence of these students' graduates is still becoming a problem for several countries. Data from the Central Statistics Agency (BPS) explains that the

competence of VHS graduates who become the Open Unemployment Rate in the last five years has increased significantly.

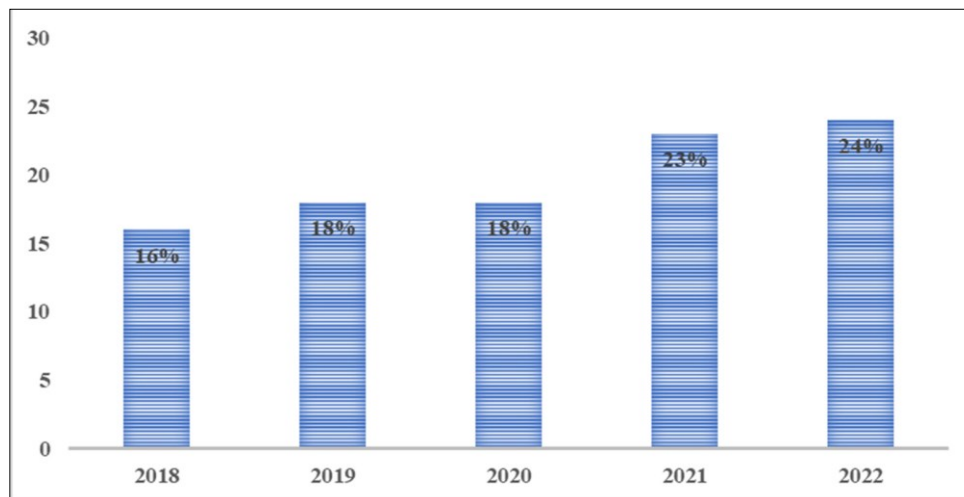


Figure 1. Open Unemployment Rate of Vocational High School Graduates

Source: (Badan Pusat Statistika, 2022)

Based on the data above, it can be explained that the unemployment of VHS graduates has increased, and it is influenced by many factors, one of which is the learning process. Due to the impact of the COVID-19 pandemic and the acceleration of digital transformation, online learning has become commonplace for VHS. This is also offset by paperless, application-based, and online-based activities. The learning process is the development of students' knowledge, skills, and competencies through the materials provided by the teacher at the school. Meanwhile, the industry is a partner institution to benchmark the quality of schools' learning. In this regard, learning can be carried out by collaborating with industries as an essential part of the alignment.

During the covid pandemic, collaborative online learning is an effort to maintain learning between teachers and students due to social distancing (Mona Adha, 2020). At the tertiary level, the collaborative online learning model aims to develop collaboration between lecturers and students (Padmo et al., 2021). Collaborative online learning is part of the non-cognitive skills for self-development (Peter & Lois, 2020). The collaborative learning process requires good management (Asriadi, 2021) to ensure the learning quality (Asakir & Mahmudah, 2022; Susanto & Mahmudah, 2022). The learning process actively involves students' knowledge development with various approaches from the teacher (Kasih et al., 2021).

Various studies show that online collaborative learning is mainly done at the university level. Mostly focuses on the relevance between VHS and industrial needs. This research provides a new understanding regarding the alignment of vocational programs with industry through collaborative learning. Thus, it helps vocational high school teachers and industry instructors develop materials mutually to ensure the link and match between the schools materials and

industrial needs. The primary purpose of this article is to find the latest and best models related to collaborative learning that align with industry needs. Although many researchers have worked on collaborative learning, only a few researchers have reported on the components and indicators that can be used as an essential part of developing collaborative online learning for vocational high schools and the industry. This data is beneficial in reducing unemployment among VHS graduates. Some researchers focus on the online collaborative learning process at the university level. There is limited research related to non-cognitive skills. Therefore, this study intends to explore collaborative online learning practices by teachers in VHS and industry as cooperative institutions. This study aims to reveal the essential components and indicators in the online collaborative learning process as part of a vocational alignment program.

## **METHOD**

### **Research Design**

This research approach is qualitative with a case study design because the research setting is a unique activity and has not been found in other schools. Cases can be explored for their uniqueness through singular or plural cases (Creswell & Creswell, 2018). "... unique approach based on the type of question being asked and the needs of the researcher" (Saini & Shlonsky, 2012). Case studies have specificity and purpose (Miles et al., 2014). The case study design explores meaning in field data collection (Baxter & Jack, 2008). This research explores the practice of collaborative online learning to improve competence and skills at the Prambanan Muhammadiyah School. The learning practice is on the implementation of multimedia class competencies. This competency is the basis for synchronising the schools' materials and industrial needs. The participants of this study were productive teachers of multimedia competence, alumni, and HRD of certain industries. The determination of participants used purposive sampling to ensure that specific kinds of cases of those that could be included as part of the final sample in the study (Campbell et al., 2020).

### **Data Collection Technique**

Data collection techniques in this study used semi-structured interviews because it needs a detailed question guide is prepared in detail when collecting interview data. The guidelines for collecting field data are listed in Table 1.

Table 1. Interview Guidelines

<b>No.</b>	<b>Questions</b>
1	How is collaborative learning between VHS and the industry?
2	What are the tools/devices used in collaborative learning?

## Research Procedures

This study uses an interactive analytical model procedure (Miles et al., 2014). The analysis process of this research was carried out before, during, and after data collection. The interactive research procedure can be seen in Figure 1.

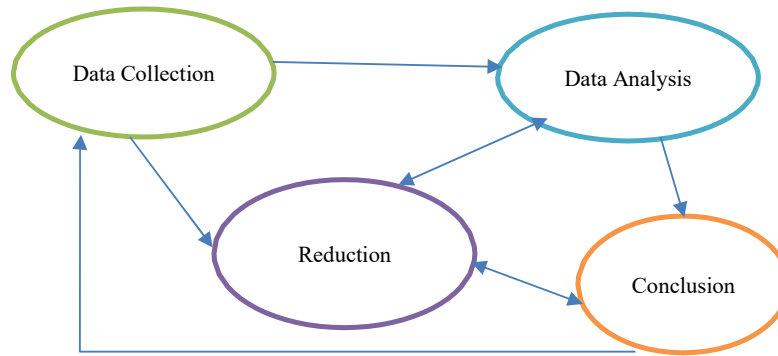


Figure 2. Research Procedures

The analysis procedure carried out in this study is in the following order:

1. Data collection was done using interviews. It explores the practice of collaborative online learning as a joint effort between VHS and the industry in aligning the competencies taught in schools based on industry needs. This collaborative learning is the focus for researchers to be able to find novelty in the process of improving and developing collaborative programs with the industry.
2. Data reduction was done by selecting important data according to the research objectives. Irrelevant data related to collaborative online learning will be removed during the data analysis.
3. Data analysis employed atlas.ti software version 9. The software aims to manage documents, compile research codes, and create research concept maps (Mahmudah, 2021). Novelty research is obtained from concept maps in the research process. Data analysis in this study was conducted by (1) transcribing data from the field; (2) formulating the meaning obtained from the participant's statement by making a research code; (3) creating a research concept map.

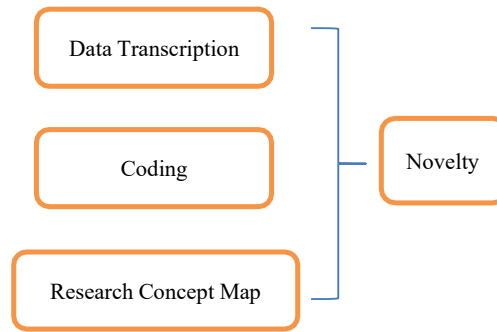


Figure 3. Data Analysis

4. Conclusion shows the results of the concept map referring to the latest and relevant theories to bring the cores from the research at the end of the study.

## RESULTS AND DISCUSSION

This study involved 3 (three) participants by following the code of ethics for qualitative research of which the participants in this study were coded P1, P2, and P3. The method used in data collection was a semi-structured interview (Code: WST). The questions used in data collection in the field were developed along with the participants' answers. The questions showed the characteristics of each participant. The list of questions that had been developed was implemented in the interview guidelines, as shown in Table 2.

Table 2. Interview Questions

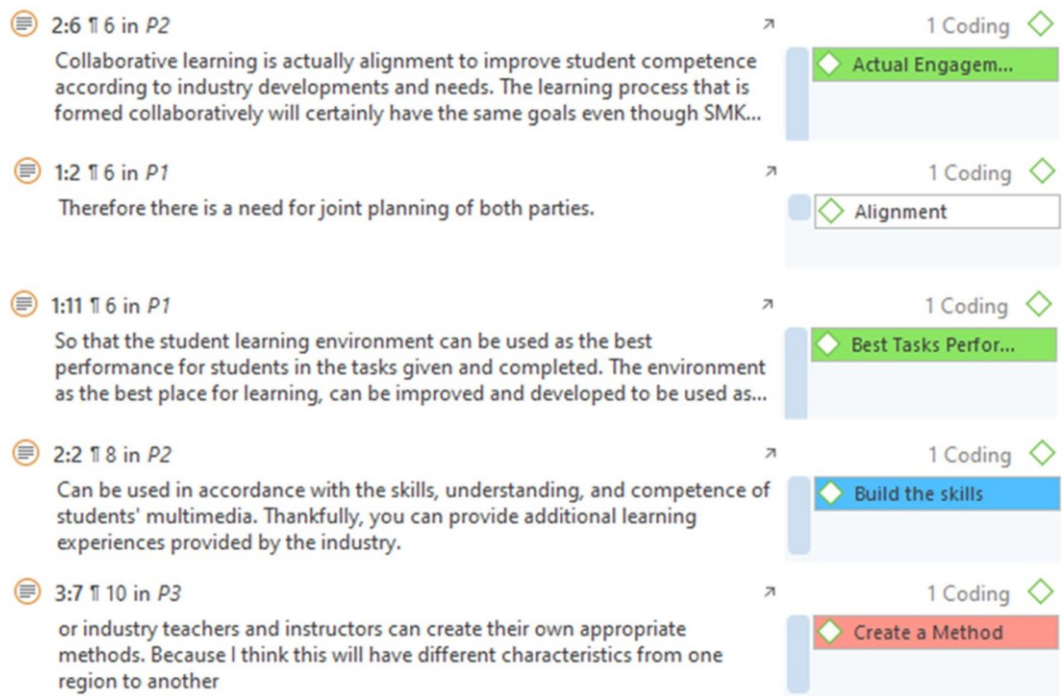
No.	Questions
1	What kind of method is used?
2	How to improve students' understanding of collaborative learning?

### Data Transcription

The data obtained from the field was then transcribed as the first step in data analysis after the data had been collected. All field data collected using a recorder was transcribed and compared to journals and field notes. It aims to obtain a complete picture of the field related to collaborative online learning in VHS and industry as part of the alignment process and to facilitate researchers in conducting data reduction. Researchers re-select relevant data based on the research objectives. The data reduction results were tabulated in the form of research codes to be used as research findings.

### Coding of the Data

The next step is to code the data. The code in this study is formulating the meaning of the participants' statements (P1, P2, and P3). The coding process in this study used the Atlas.ti software version 9. The coding was carried out in sequence according to the questions compiled in the interview guide and the follow-up questions in the field during the interview sessions. Based on the research data, the code created from the data is 24 codes. Of the total codes formulated from the meaning of the participant's statements, 2 codes are irrelevant, so they are discarded for the next stage of analysis to build the research concept map. They were 1:1 6 in P1 with the code "Required Competence" and 1:2 6 in P1 with the code "Alignment". The 22 codes can be seen in Figure 4.



3:2 ¶ 8 in P3 Of course, what is in accordance with the needs of the industry and thankfully the role of the industry in providing learning facilities is highly expected by SMKs	1 Coding Optimization of...
3:6 ¶ 10 in P3 yes besides the project, then there is also a problem-based approach that is solved	1 Coding Problem-Based L...
1:1 ¶ 6 in P1 Learning plans are prepared according to needs industry	1 Coding Required compe...
1:15 ¶ 10 in P1 Personally, I think that's how it is..... it's a project, so students are equipped with knowledge related to programs that can be developed using projects.	1 Coding Project-Based Le...
1:12 ¶ 6 in P1 Teachers in Vocational Schools with instructors in the industry have the same role in increasing student competency. So that in terms of this alignment cooperation, SMK and industry have the same coordination and are well org...	1 Coding Students' - Teac...
1:13 ¶ 8 in P1 yes, in my opinion yes that can be used, of course. Then like this, that's mmmmm, aaaa what, of course, schools will be greatly assisted by industries that have adequate equipment for learning. Like competence in m...	1 Coding Usability
3:8 ¶ 6 in P3 This can make students better understand the environment and needs, especially abilities, skills, and sensitivity in increasing their competency abilities	1 Coding Real-life skills
1:17 ¶ 12 in P1 yes according to the reality of industry needs, so that students don't just accept general knowledge material and leave the existing reality like what	1 Coding Apply Methods
2:7 ¶ 10 in P2 oday's students will find it easier to understand learning if the students themselves practice directly so that students can become the main actors in the learning process	1 Coding Inquiry Learning
2:8 ¶ 10 in P2 Students are active and free to tinker with multimedia programs in accordance with their future perspectives.	1 Coding Development of...

Figure 4. the Twenty-two coding results

### Research Concept Map

Based on the research codes above, the next step is to create a research concept map. The way to make a research concept map is by connecting the codes into the same meaning as a whole and in its entirety so that it can produce patterns from related codes. This concept map was compiled to generate original ideas from research on online learning collaboration between VHS

and industries. The concept map was compiled using a qualitative analysis tool, Atlas.ti software version 9. The concept map of this research is as follows:



Figure 5. The novelty of the study

Based on the results of qualitative analysis that has been carried out with the help of Atlas.ti software version 9, it can be concluded that this study found several components that can be used in collaborative online learning as part of the alignment program of VHS with industries. The main components that must exist in collaborative online learning from this research novelty are pedagogical learning environments, instructions, digital tools, applied methods, and the development of critical thinking. Each component of the research findings above has different indicators. In the pedagogical learning environment, the indicators in this study are actual



engagement, best tasks performed, and feed-forward. The instructions component indicates students' – teachers' roles and builds the skills. The components in Digital tools consist of usability, flexible learning, and optimisation of industries' infrastructure. In the apply methods component there are indicators of creating a method, gamification, inquiry learning, problem-based learning, and project-based learning. The development of critical thinking consists of indicators of knowledge-building and real-life skills.

The findings of this study have a unique character because they are different from previous research. This research focuses on improving the alignment of learning in vocational schools according to industry needs. In previous research, collaborative online learning is considered as a solution for educational institutions in implementing learning that has limited communication between teachers and students (Curtis & Lawson, 2001). Online collaborative learning is most relevant to specific subjects, especially designer subjects because it has practical implications relevant to teaching situations (Bennett, 2004). Collaborative online learning requires social, pedagogical, and technical support playing the roles of teachers and students (Altowairiki, 2021). An essential process in collaborative online learning is that teachers can consider the benefits, preferences, and challenges of students from diverse cultural backgrounds (Kumi-Yeboah et al., 2017). Likewise, those related to teachers can use applications as media in learning, although there are still many obstacles in its operation (Mona Adha, 2020).

Based on this, it can be understood holistically that collaborative online learning is important in improving the learning process and the quality of graduates in employment. Learning becomes an essential and central part of developing teacher competence to deliver learning material. It means teachers need to involve the world of work in the quality improvement process. It aims to upgrade knowledge and development following the needs of the world of work. Therefore, collaborative online learning with the world of work is one of the alignment programs for vocational high schools with the world of work.

## **CONCLUSION**

Based on the analysis and discussion above, it can be concluded that collaborative online learning that is carried out jointly between VHS and the industry needs a sustainable support. This collaborative learning positively impacts VHS to improve students' skills and competencies according to the industry needs. For industry, they will have potential workforce candidates who become part of the collaboration and joint learning development. This research is recommended for all VHS in Indonesia with various fields of expertise and the industry as partner institutions to develop such a collaborative program to design qualified learning processes.

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