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

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COLLABORATIVE ON-LINE LEARNING: IMPLEMENTATION OF VOCATIONAL ALIGNMENT IN ACCORDANCE WITH 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. The purpose of this study is 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 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 was using source triangulation. The results of this study are that there are main components that must exist in collaborative on-line learning, namely pedagogical learning environments, instructions, digital tools, apply methods, and 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 as technology develops. So that they can take advantage of technology in learning through online learning collaborations.

Keywords: collaboration, digital transformation, industry, on-line learning, vocational school

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INTRODUCTION

Vocational High School is an education that aims to prepare graduates who are skilled, competent, have strong independence, and struggle. These goals can be established through programs, activities, and synchronous learning between Vocational High Schools and industry needs. The competition for vocational high school graduates is the basis for being able to compete (Cahyono et al., 2021). Competence is a common thread between the development of materials taught in schools that are adapted to the development of science and technology in the industry (Kurniawan & Mahmudah, 2020). The competence of these students' graduates is still a problem

in the competencies produced. Data from the Central Statistics Agency explains that the competence of SMK graduates who have become the Open Unemployment Rate in the last five years has increased significantly.

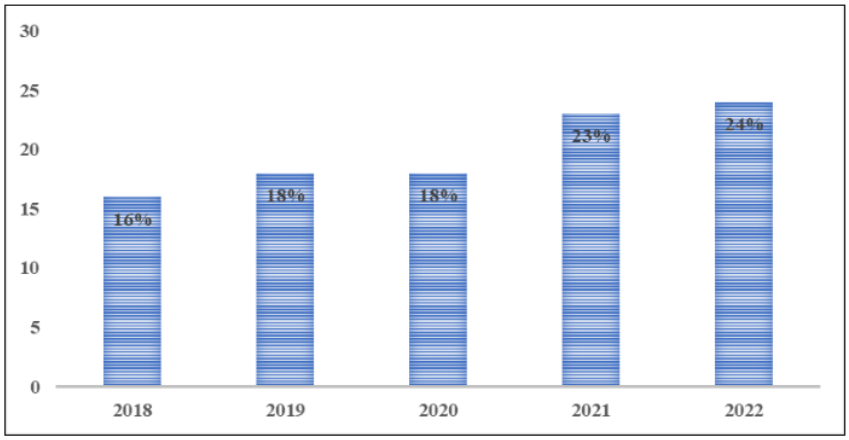


Figure 1. Open Unemployment Rate of Vocational High School Graduates
Source: (Badan Pusat Statistika, 2022)

Based on the data above, it can be explained that the unemployment of Vocational High School graduates has increased. Many factors are the basis, one of which is in the learning process. Online learning due to the impact of the COVID-19 pandemic and the acceleration of digital transformation has become commonplace for Vocational High Schools. 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 that reflects the improvement in the quality of learning in schools (Mahmudah et al., 2021). In this regard, learning can be carried out together and in collaboration between vocational high schools and industry as an important 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 needed for self-development (Peter & Lois, 2020). The collaborative learning process requires good management (Asriadi, 2021). The management process is part of the development of collaborative online learning quality (Asakir & Mahmudah, 2022; Susanto & Mahmudah, 2022). The learning process actively involves students to be able to develop knowledge with various approaches provided by the teacher (Kasih et al., 2021).

Various studies that have been done by previous researchers show that online collaborative learning is mostly done at the university level. Unfortunately, it does not focus on research in Vocational High Schools that are relevant to the industry. 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 instructors in the industry to be able to develop materials together so that the competencies taught in schools are relevant to industry needs.

The main 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, very few researchers have reported on the components and indicators that can be used as a basic part of developing collaborative online learning for vocational high schools and industry. This data is very useful in reducing unemployment for SMK 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 carried out by teachers in vocational high schools and industry as cooperative institutions. The purpose of this study is to reveal the important components and indicators in the online collaborative learning process as part of a vocational alignment program.

METHOD

Research Design

This research design is qualitative. The approach used is a case study. The reason for choosing the case study approach is 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 is an exploration of meaning in field data collection (Baxter & Jack, 2008). This research is a process of exploring the meaning related to the practice of collaborative on-line learning in order to improve competence and skills at the Prambanan Muhammadiyah School. The learning practice that is photographed is the implementation of multimedia class competencies. This competency is the basis for synchronization taught in schools with the needs of DUDI. The participants of this study were productive teachers of multimedia competence, alumni, and HRD at DUDI. Determination of participants by using purposive sampling. Purposive sampling strategies move away from any random form of sampling and are strategies to make sure that specific kinds of cases of those that

could possibly be includedare part of the final sample in the research study (Campbell et al., 2020).

Data Collection Technique

Data collection techniques in this study used semi-structured interviews. The determination to use semi-structured because researchers need a question guide that is prepared in detail and developed at the time of collecting interview data. Guidelines for collecting field data that have been compiled are listed in table 1.

Table 1. Interview Guidelines

No.	Questions
1	How is collaborative learning between SMK and 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.

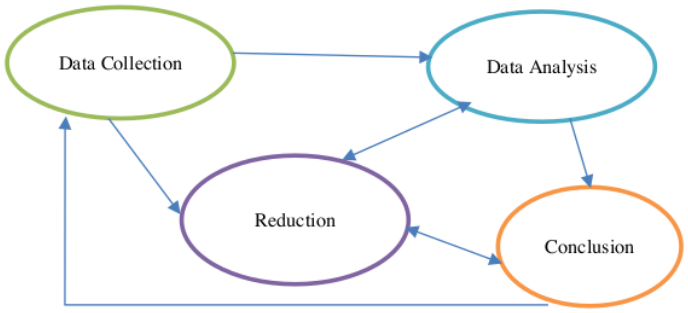


Figure 2. Research Procedures

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

1. Data Collection, conducted using interviews. This data collection is to explore the practice of collaborative online learning as a joint effort between SMK and industry in aligning the competencies taught in schools with industry needs. This collaborative learning is the focus for researchers to be able to find novelty in the process of improving and developing programs together with industry.

2. Data Reduction is done by selecting important data according to the objectives of the research. Irrelevant data related to collaborative online learning will be removed and not used in the data analysis process.
3. Data Analysis using 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 compiled in the research process. Data analysis carried out in this study was by (1) transcription of data from the field; (2) formulating the meaning obtained from the participant's statement by making a research code; (3) create a research concept map.

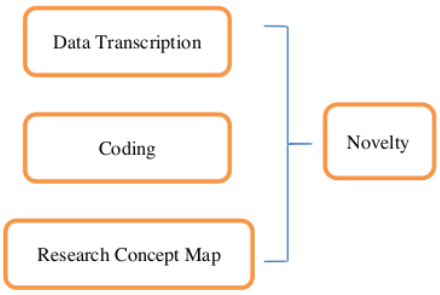


Figure 3. Data Analysis

4. Conclusion is showing the results of the concept map discussed using the latest and relevant theories so as to bring up conclusions from the research at the end of the study.

RESULTS AND DISCUSSION

This study involved 3 (three) participants. In accordance with the code of ethics for qualitative research, participants in this study were coded P1, P2, and P3. The method used in data collection is a semi-structured interview (Code: WST). The questions used in data collection in the field developed along with the answers of the participants. The questions that develop have the characteristics of each participant who is the source of the data. The list of questions that have developed and have not been written explicitly in the interview guide is shown in table 2.

Table 2. Evolving Interview Questions

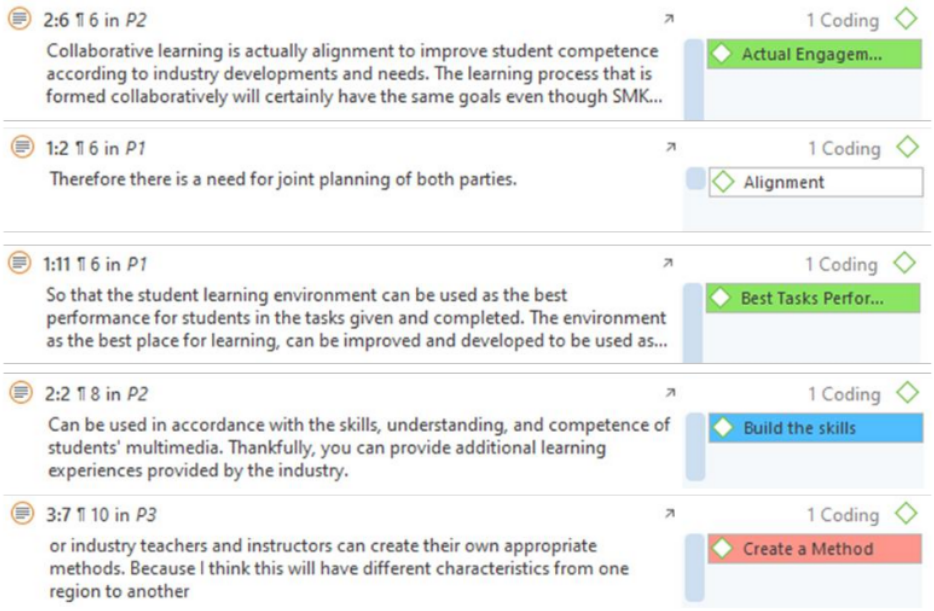
No.	Questions
1	What kind of method is used?
2	How to improve students' understanding of collaborative learning?

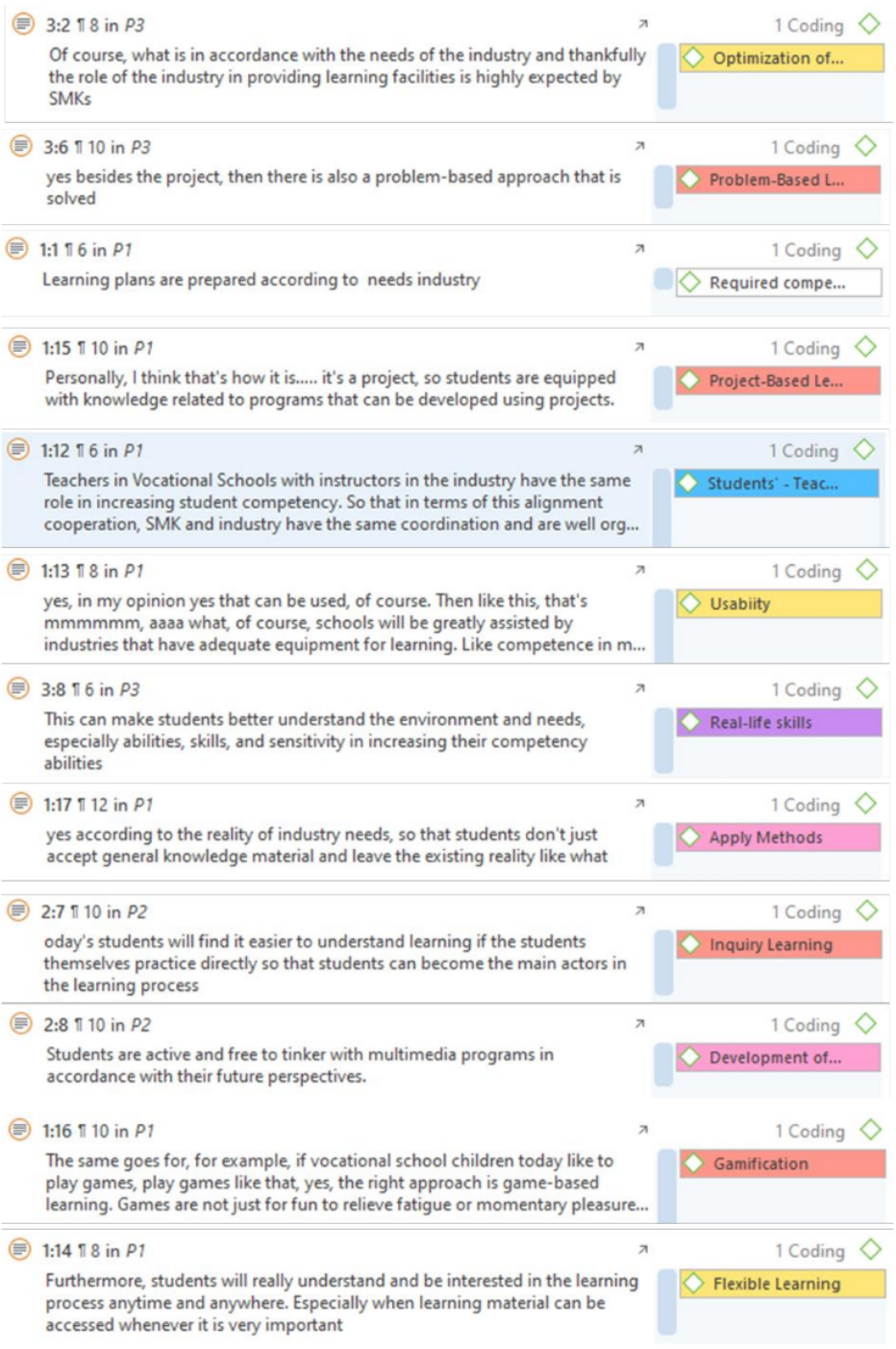
Data Transcription

The data obtained from the field was then transcribed. This is the first step in data analysis after data has been collected. All data from the field which was carried out using a recorder was transcribed, as well as related to journals and field notes. This aims to obtain a complete picture in the field related to collaborative online learning in vocational schools and industry as part of the alignment. It aims to facilitate researchers in conducting data reduction. Researchers re-select relevant data in accordance with research objectives. The results of data reduction are then made research codes to be used as research findings. The findings of this study differ from various studies that have been carried out by previous researchers.

Coding of the Data

The next step is to code the data. The code in this study is a formulation of the meaning of the statements of the participants (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 questions developed in the field when conducting interviews with the participants. Based on the research data, the code created from the collected data is 24 codes. Of the total codes formulated from the meaning of the participant's statements, there are 2 codes that are not relevant so that they are discarded and are not used in the next stage of analysis in making the research concept map. The 2 codes are 1:1 6 in P1 with the code "Required Competence" and at 1:2 6 in P1 with the code "Alignment". The 22 codes can be seen in the figure 4.





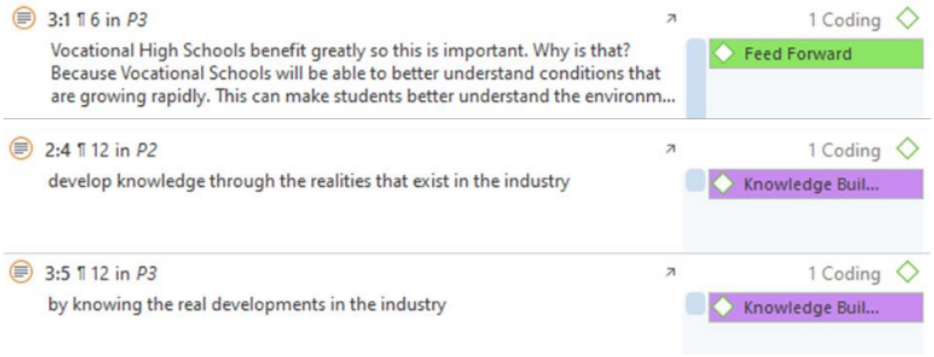


Figure 4. Coding of the Data

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 to connect 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 related to online learning collaboration between SMK and Industry. The concept map was compiled using a qualitative analysis tool, namely Atlas.ti software version 9. The concept map of this research is as follows:

Figure 4. Novelty

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 on-line learning as part of the alignment program of SMK with industry. The main components that must exist in collaborative on-line learning from this research novelty are pedagogical learning environments, instructions, digital tools, apply methods, and 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 has indicators of students' – teachers' roles and build the skills. The components in Digital tools consist of usability, flexible learning, and optimization of industries' infrastructure. In the apply methods

component there are indicators of create a method, gamification, inquiry learning, problem-based learning, and project-based learning. Development of critical thinking consists of indicators of knowledge building and real-life skills.

The findings of this study have a unique characteristic because they are different from previous research. This research has a focus and aims to improve the alignment of learning in vocational schools according to industry needs. In previous research, collaborative on-line learning is a solution for educational institutions in implementing learning that has limited communication between teachers and students (Curtis & Lawson, 2001). On-line collaborative learning is most relevant to certain subjects, especially designer subjects because it has practical implications that are relevant to teaching situations (Bennett, 2004). Collaborative on-line learning requires social, pedagogical, and technical support by playing the roles of teachers and students (Altowairiki, 2021). An important process in collaborative on-line 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 an important part of improving the quality of learning and improving the quality of graduates in employment. Learning becomes an important and main part of the process of developing teacher competence in delivering learning material. With that in mind, it is important for teachers to involve the world of work in the quality improvement process. It aims to be able to upgrade knowledge and development in accordance with 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 results of the analysis and discussion above, it can be concluded that collaborative online learning that is carried out jointly between Vocational Schools and the industry is a program that needs to be supported so that it is sustainable. This collaborative learning has a positive impact on SMK, especially to improve student's skills and competencies according to industry needs. For industry, the impact that can be obtained is to have potential workforce candidates from Vocational Schools who are part of the collaboration and joint learning development. This research is recommended for all Vocational Schools in Indonesia with various fields of expertise and industry as partner institutions to be able to develop programs together and learning processes that are designed together as well.

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