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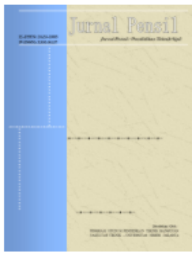

# IMPROVING VOCATIONAL STUDENT COMPETENCIES THROUGH INDUSTRIAL CLASS-BASED EXPERIANTIAL LEARNING

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**Abstract**

This research aims to evaluate the implementation of experiential learning based on industrial classes in Vocational High Schools (SMK) and its impact on improving student competencies, which is considered crucial to face the challenges of industrial development in Indonesia. This learning approach is expected to provide authentic learning experiences and is relevant to the needs of the world of work, proven to improve students' motivation, learning outcomes and practical skills in various subjects through a literature review. However, the high unemployment rate of SMK graduates and the lack of connection between the school curriculum and industry demands indicate the urgency of developing a learning model that better integrates education with industry needs. The Systematic Literature Review (SLR) method was used to analyze ten related previous studies, showing that experiential learning models have a positive impact on learning motivation and learning outcomes of vocational students. However, the research highlighted the limitations of implementing industry-based experiential learning, which requires collaboration between schools, government and industry. Involving industry in the learning process is expected to provide students with hands-on experience, improving their readiness to enter the world of work. This research contributes in detailing the benefits of industry-based experiential learning in SMK as well as highlighting the need to improve the implementation of this model. The findings of this study provide a basis for further research and development efforts in vocational education in Indonesia.

**Keywords:** Program Evaluation, Stake's Accounting, Science Learning

## Introduction

Indonesia as a developing country requires industrial development in various sectors such as infrastructure so that skilled and competent workers are needed in their fields (Hatmoko et al., 2020; Pribadi, 2023). Vocational education as a producer of competent human resources is highly required to adapt quickly to face these challenges by preparing vocational school graduates who are competent in their fields (Blima et al., 2016; Ismaya et al., 2021).

Vocational High Schools were built for the purpose of forming a skilled, work-ready and competitive workforce. So that through 21st century education it has resulted in developments in science and technology known as the era of industrial revolution 4.0 (Muhammad et al., 2020; Setuju et al., 2021; Shahroom & Hussin, 2018) which has changed almost all fields of work to be cyber-digital based. These changes become challenges and opportunities to create new things or jobs with new competencies (Kuper, 2020).

Competence is a selling point in the industrial world. People who have competence will have a high selling value, conversely if their competence is low it will result in a low selling value in the world of work. Competency is a description of performance or the result of knowledge, skills and attitudes acquired professionally for a particular job (Nihayah et al., 2022; Rifa'i et al., 2022). Quality education plays an important role in producing superior human resources, so that it can create the nation's next generation who are able to compete in today's world of work. Apart from that, education also has a big contribution in dealing with employment problems in Indonesia, especially the problem of unemployment which is still a serious focus for this country. The high population and limited employment opportunities make unemployment a difficult challenge faced by the Indonesian government (Najah & Lindasari, 2022; Wahab & Sudirman, 2023).

The level of workforce preparation through Vocational High Schools (SMK) still requires improvement. This is supported by unemployment rate data from the Central Statistics Agency (BPS) in 2023, which shows that the highest open unemployment rate (TPT) was recorded among vocational school graduates. In February 2022, the unemployment percentage of vocational school graduates reached 9.42%, this figure experienced a significant decrease when compared to February 2021 data which reached 11.13%, and 2020 data which reached 13.55%.

The number of vocational school graduates contributed the highest figure (Ramadhan & Aulia, 2023) in unemployment, it shows that the aim of Vocational Schools in preparing graduates who are ready to work has not been achieved optimally, the reason underlying the high unemployment rate of the first Vocational School graduates is because each Vocational School has a different quality of graduates in terms of sufficient knowledge, expertise and skills; the second reason is because there is still no match between the competencies possessed by vocational school graduates and the needs in the world of work and the low absorption of graduates as workers and as job creators (Garnadi et al., 2022; Riswati et al., 2021)

One effective way to overcome the problem of unemployment is to prepare workers who have skills appropriate to the industrial field they work in. The resulting workforce is expected to have knowledge, skills and work attitudes that are in line with industry needs. To achieve this, training on equipment and working conditions relevant to their job is necessary. In addition, it is important for students to gain direct experience in the world of work to increase the efficiency and effectiveness of vocational education. This way, students will be better prepared to face the world of work after they graduate.

Based on the results of observations at SMK N 4 Jakarta, it appears that the implementation of Field Work Practices with the Industrial World has not provided satisfactory results. There are several problems, one of which is mismatch. Mismatch refers to the gap between the vocational education curriculum at school and the demands that exist in the world of work. This problem arises because vocational schools have not been able to fully adapt to the world of work environment, due to the limitations of adequate work workshop facilities and the lack of optimal implementation of cooperation with the industrial world.

The Vocational School Industrial Class Program is a program that can integrate learning between schools and the industrial world by integrating the education system in schools and existing ones with systems in industry. Implementation of industrial class programs in the field is still far from expectations government in realizing industry-based vocational education (Priambudi et al., 2020). The implementation of industrial class programs still has many obstacles, such as the mismatch between the school curriculum and industry needs, industry/company participation has not been maximized, and the learning curriculum model is not in sync with theory and skills. An effective school-industry partnership model has not been fully developed, resulting in low recruitment of graduates by companies/industry (Astuti et al., 2023).

Learning at SMK Negeri 4 Jakarta, especially in the concentration of Housing Construction Engineering in productive subjects, still uses conventional learning models. This model prioritizes the role of the teacher as the center of teaching and learning activities in the classroom, so that the teacher has high dominance. The impact of this model can be seen in the learning outcomes of students in the even semester of the 2021/2022 academic year and the even semester of the 2022/2023 academic year, where there are still students who do not reach the minimum completion standards (KKM) for productive subjects, which is set in value 80.

Apart from that, the low-test results are caused by internal and external factors. Internal factors refer to things that come from within the student, while external factors include aspects from outside the student, such as the learning process carried out by the teacher, curriculum, school facilities and infrastructure, as well as the school environment, family and community as well as other factors (Devira, 2020).

Ineffective learning is one of the causes of low learning outcomes. Learning outcomes are obtained after students receive their learning experience. In every teaching and learning process, its success is measured by the learning outcomes achieved by students. Because learning outcomes are an important part of the education and teaching process (Arianto et al., 2019). Apart from that, the inappropriate use of learning models can also cause boredom, monotony, or difficulty for students in understanding the concepts being taught.

Based on the problems above, this study will focus on learning models. One learning model that can provide experience that is appropriate to the world of work or industry is experiential learning (Hakima & Hidayat, 2020). Experiential learning model is a type of learning that emphasizes direct activities and experience as the main method of teaching. It is based on the premise that learning occurs through direct experience and reflection on that experience. This learning model has been proven effective in a variety of educational contexts, including higher education settings (Nugraha, 2022; Nurliani et al., 2022; Saud & Asnur, 2018).

The application of the experiential learning model in industrial classes aims to increase the competency of students in vocational high schools (SMK). This model focuses on real experience and practical application in productive subjects, helping students understand and apply theoretical concepts more effectively (Achsani et al., 2020; Bradberry et al., 2005; Morris, 2020). In current implementation of learning, teachers are not the only source of information in the teaching and learning process (Sunawardhani & Casmudi, 2022). Teachers can use other sources both from the school environment and from outside the school as sources in learning. One method is known as when outsiders who are not teachers give lessons to students to overcome the limitations of technology and learning facilities (Firdaus & Wilujeng, 2018; Widodo, 2023).

The existence of industrial classes that can adapt to industrial needs and expectations from vocational schools, by involving instructors from the world of industry, business and the world of work, or teachers who have the latest knowledge and skills, as well as a synchronized curriculum, allows students to directly experience work practices. in a real work environment. Related to the explanation above, it is very necessary to carry out experiential learning research in different contexts.

## Research Methodology

The type of research used is the Systematic Literature Review (SLR) method. According to Kitchenham in Anggraeni, et al (2021), Systematic Literature Review (SLR) is "a research method for identifying, evaluating, and interpreting all relevant research results related to research questions, topics, or phenomena of concern (Ishartono et al., 2023)." The SLR method consists of the Planning stage which includes setting the subject matter according to the research object.

In this article, researchers conducted an analysis of ten previous studies, and the results of the analysis are presented in table form. The stages carried out involve planning the subject matter in accordance with the research object. The next stage, involves searching for sources from the Google Scholar platform. The final stage, namely reporting, involves filtering sources to obtain results in accordance with the research inclusion criteria. At this stage, the author succeeded in collecting several sources and carried out filtering to obtain results that met the research inclusion criteria.

## Research Results and Discussion

### Planning

At this literature stage, the problem formulation that has been expressed in the introduction will be used as a source of perspective material. The data used later will be secondary data, where the data is found indirectly, meaning not through acquisition interactions for research in the field. However, this data will be obtained from the results of literature studies and several supporting archives that are concluded.

The following research questions used in this literature study include:

RQ1. How the application of industrial class-based experiential learning can improve student competencein vocational school?

RQ2. Is there a significant difference in increasing student competency between industrial class-based experiential learning and conventional teaching methods in vocational schools?

### Implementation

At the implementation stage, the literature observation method was used which required a relatively long time to search for and obtain articles and journals that were relevant to the discussion of this literature study research. Because literature studies only use secondary data, it is very important to identify several journals that are considered to have discussions in accordance with literature studies, so that they can be used as references. The journal used is an international journal found through the Systematic Literature Review (SLR) method. Using the SLR method makes it easier for authors to determine and filter journals that can be used as references.

In searching for data from journals, the keyword used was "experiential learning model," and the search was carried out on several international journal platforms, including Science Direct, Google Scholar, Mendeley, and several other journal platforms. The SLR method not only helps in identifying search keywords, but also provides support for quality assessment to answer questions asked at the planning stage. Follow-up questions from the planning stage include:

QA1. Are journal papers published in 2019-2024?

QA2. Does this journal paper provide information to fulfill RQ1?

QA3. Does this journal paper provide information to fulfill RQ2?

### Reporting

The final step in the Systematic Literature Review (SLR) process is processing the research sources that will be analyzed and explained in a discussion. After sorting a number of journals using the SLR method, the next step is to draw conclusions from the results of the SLR method by referring to several sources relevant to the topic and providing the necessary information by

marking the Research Question (RQ) found in a journaling. The results of marking the Research Question (RQ) will then be recorded in Table 1. Some of the information includes number, author, title, and Quality Assessment (QA), where QA is used to classify journals based on quality assessments that are in accordance with the information at the implementation stage. Several journals that were successfully identified using the SLR method are recorded in Table 1.

Table 1. SLR Method

| No | Author | Year | QA |
|---|---|---|---|
| 1. | Kholifatul Fithriyah, Muchamad Arif, Puji Rahayu Ningsih | 2019 | 1,2,3 |
| 2. | Lutfi Asyari, Risma Nuriyanti, Dani Gunawan, Rajji K. Adiredja | 2021 | 1,2 |
| 3. | Dwi Fajri Masse, M. Sumual,, David O. Mapaliaey | 2021 | 1,2,3 |
| 4. | Dwi Wahyuningsih, Indrawati, Sri Wahyuni | 2021 | 1,2,3 |
| 5. | Nurul Fadieny, Ahmad Fauzi | 2021 | 1 |
| 6. | Marfiatul Hajjah, Fatimatul Munawaroh, Ana Yuniasti Retno Wulandari, and Yunin Hidayati | 2022 | 1,2 |
| 7. | Anita Winandari, Leo Agung Sutimin, Triana Rejekiningsih | 2022 | 1 |
| 8. | Ronald M. Castillo, Paul Derick A. Olorga, Maria Francesca N. Lagran and Allen John H. Carpio | 2023 | 1 |
| 9. | Try Susanti, Fifi Murniasari, Diandara Oryza | 2023 | 1,2 |
| 10. | Fitri Fatimah Sistiana, Windyariani, Setiono Setiono | 2024 | 1,2 |

In Table 1, the Quality Assessment shows the results of research from 10 journals, namely that students showed positive reactions and their learning outcomes increased after implementing the experiential learning model. This is useful in expanding student learning support which can then further develop their learning outcomes.

Quality Assessment Analysis 1

In this research, ten pieces of literature were used and met the Research Question (RQ) standards. This literature was mostly published in the publication years 2019 and 2024, each consisting of one journal. In 2022 there will be two journals, while in 2023 there will be two journals. In 2021, there are five journals that are part of the literature accessed.

Results of Quality Assessment Analysis 2

From the ten selected pieces of literature, it can be seen that there is a correlation before and after implementing the experiential learning model. The following is a table that shows a comparison of the pre-test and post-test in the experiential learning model.

Table 2. Comparison of Pre-Test and Post-Test Experimental Learning

| Literature | Pre-test | Post test |
|---|---|---|
| **L1** | 40.8 | 73.375 |
| **L2** | 42.50 | 77.29 |
| **L3** | 41.2 | 83.73 |
| **L4** | 47.3 | 85.68 |
| **L5** | - | - |
| **L6** | 11.58 | 71.0227 |
| **L7** | - | - |
| **L8** | - | - |
| **L9** | 74.1 | 85.0 |
| **L10** | 83 | 89 |

The explanation from table 2 above includes an analysis of the experiential learning model, which is presented in table 3, including.

Table 3. Results of Literature Review

| No | Literature Review Results |
|---|---|
| 1. | The research results of Kholifatul Fithriyah et al (2019) show that the experiential learning model has a positive influence on vocational school students' learning motivation in digital simulation subjects. Learning with an experiential learning approach improves students' ability to solve problems, including at high and low intelligence levels. Differences in intelligence levels are also part of the research results, with the hope that various learning models can have a positive impact on all students. |
| 2. | Research conducted by Lutfi Asyari et al (2017) regarding the effects of using the experiential learning model on elementary school students' narrative writing skills showed significant results. This research used a quasi-experimental design with a nonequivalent control group design. Analysis of the results shows a significant difference between the posttest of the experimental class and the control class. From these findings, it can be concluded that the application of the experiential learning model has a significant positive impact on elementary school students' narrative writing abilities. |
| 3. | Research by Fajri Masse and colleagues (2021) aims to evaluate the impact of the experiential learning model on the learning outcomes of class XI students majoring in basic automotive technology. The results of this research show that the application of the experiential learning model has a significant positive impact on students to develop a deeper understanding of concepts and improve practical skills in the automotive context. |
| 4. | The research results show that the application of the experiential learning model in physics learning at vocational schools has a positive impact on students' learning motivation and understanding of concepts. This research confirms that the experiential learning model is effective in increasing students' learning motivation and understanding of physics concepts in vocational schools (Wahyuningsih et al., 2021) |
| 5. | Research conducted by Fadieny & Fauzi (2021)) aims to evaluate the level of usefulness of experiential learning-based e-modules in physics learning. This research uses Research and Development (R&D) research with descriptive methods. The data collection instrument used was an e-module usefulness questionnaire which was evaluated by the teacher. The research results show that experiential learning-based e-modules have a very high level of usefulness in the context of physics learning. |
| 6. | Research by Marfiatul Hajjah and team (2022) aims to evaluate the impact of the experiential learning model on improving students' critical thinking abilities. The research population involved class VIII students at SMPN 3 Bangkalan with samples taken from class VIII-C. Data analysis was carried out using the Wilcoxon test and the N Gain Score test. The results of the analysis show that there is a significant influence from implementing the experiential learning model on improving students' critical thinking abilities. |
| 7. | Research by Anita Widandri and team (2022) aims to identify the benefits of electronic modules (E-modules) according to the opinions of students at Vocational High Schools, especially students majoring in Tourism class XII. This research is descriptive qualitative in nature. Data collection methods involve surveys and interviews using questionnaires and interview guides as instruments. This research concludes that the use of electronic modules based on experiential learning provides great benefits, where 94% of students have used E-modules. |
| 8. | This research, carried out by Castillo et al in (2023), discusses how games reflect the basic structure of international relations and global politics, as well as their use as educational technology during the new normal learning period of COVID-19. The results of this research show that the game allows students to understand national power, the dynamics of decision making, participation in political systems, and the behavior of global political actors in accordance with international relations theory. |
| 9. | The results of pre-research at SMA Negeri 11 Muaro Jambi by Try Susanti and colleagues in (2022) show that biology learning is not yet active, students tend to receive information from educators, and are not able to provide simple explanations, so their critical thinking skills are still low. With |

| No | Literature Review Results |
|---|---|
| | the aim of increasing learning activities, the Experiential Learning learning model is considered a varied option and can involve students' active role. This research uses quantitative methods with a Posttest Control Group Design to evaluate the influence of the Experiential Learning model on students' critical thinking abilities at SMA Negeri 11 Muaro |
| 10. | This research aims to assess students' metacognitive abilities using an experiential learning model on the human respiratory system. The research method used was Quasi Experiment with a Non-Equivalent Control Group Design. The research population consisted of students at MTs Nurul Huda, Sukabumi Regency. The application of the Experiential Learning model had an effect on increasing students' metacognitive abilities in the human respiratory system material. |

Based on the results of a literature review in journals related to the experiential learning model, convincing evidence was found that this approach significantly increases student competence in the teaching and learning process. Furthermore, the use of hands-on experience in learning provides better opportunities for students to develop practical skills and apply knowledge in real situations.

Results of Quality Assessment Analysis 3

Out of the ten pieces of literature selected, three of them conducted research at the Vocational High School (SMK) level and presented information that there was a positive impact from implementing the experiential learning model in general subjects.

The following is an analysis of the influence of the experiential learning model: a). Research tested by Kholifatul Fithriyah and colleagues (2019) shows that the application of the experiential learning model has an impact on the learning motivation of Vocational High School (SMK) students in digital simulation subjects. b). Research conducted by Fajri Masse and his colleagues (2021) aims to evaluate the influence of the experiential learning model on the learning outcomes of Vocational High School (SMK) students. The results of this research show that the application of the experiential learning model has a significant positive impact on basic automotive technology learning outcomes. c). Research tested by Wahyuningsih & Wahyuni (2021) resulted in the finding that the use of the experiential learning model in physics learning at Vocational High Schools (SMK) had a positive impact on students' learning motivation and understanding of concepts.

Based on the explanation above, it can be concluded that the experiential learning model aims to improve competencies that connect students' direct experiences in the learning process. To achieve higher effectiveness, learning experiences need to go through the entire cycle in the experiential learning model, starting from setting goals, carrying out observations and experiments, re-evaluating, to planning next actions. If this process has been completed, it allows students to learn new skills, new attitudes or new ways of thinking.

## Conclusion

From the results of the literature review, it can be concluded that the application of industrial class-based experiential learning is not yet commonly implemented in vocational schools. However, this learning model has the potential to provide innovation and improve student competence. Involving theory and hands-on practice in an industrial environment, this approach allows students to experience learning that is more authentic and relevant to the needs of the world of work. There are also differences between the application of experiential learning models and conventional learning methods in student learning outcomes.

It is necessary to encourage the implementation of industrial class-based experiential learning in vocational schools with collaboration between schools and the government. Furthermore, further research needs to be carried out with empirical data collection and in-depth analysis to strengthen existing conclusions. In addition, it is important to increase understanding of the differences between experiential learning and conventional learning methods. Finally, involving

industry in the learning process is considered important because it can provide students with real opportunities to experience the world of work and develop relevant skills.

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