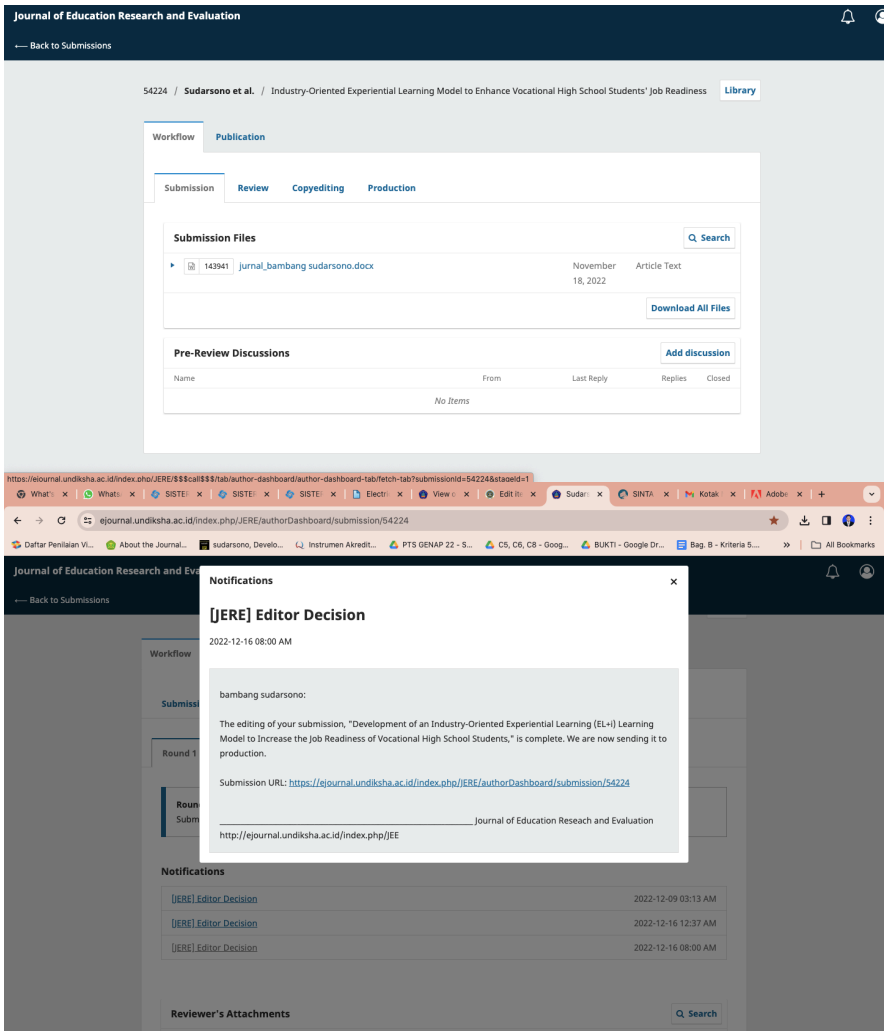
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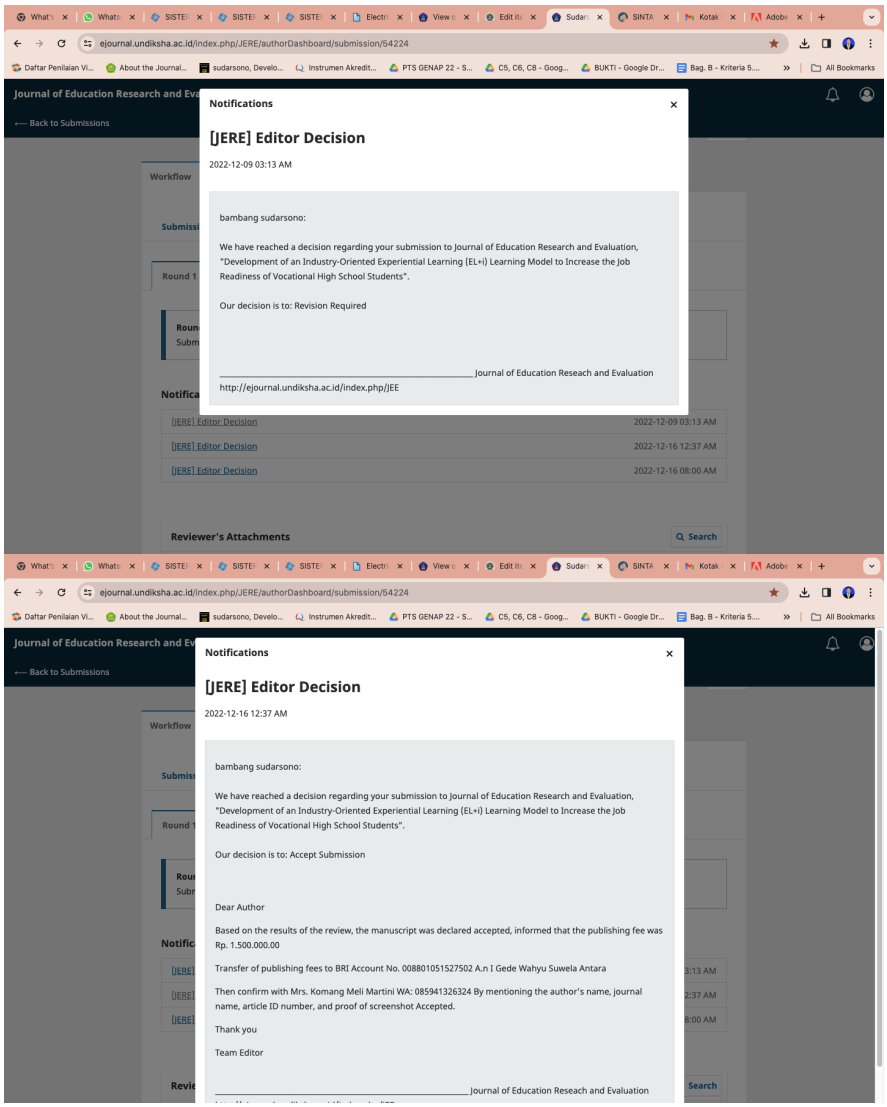
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Development of an Industry-Oriented Experiential Learning (EL+i) Learning Model to Increase the Job Readiness of Vocational High School Students

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ABSTRACT

Tingkat pengangguran di Indonesia masih didominasi dari lulusan SMK. Pengangguran terjadi karena kesiapan kerja siswa SMK yang rendah. Penelitian ini bertujuan mengembangkan model pembelajaran experiential learning berorientasi industri dan menguji keefektifannya. Penelitian ini menggunakan desain penelitian dan pengembangan (R&D) dengan tahapan analisis kebutuhan, validasi internal dan validasi eksternal. Subyek penelitian yang digunakan adalah 4 guru dan 34 siswa jurusan teknik otomotif SMK Muhammadiyah 1 Salam serta 6 praktisi industri otomotif. Teknik pengumpulan data yang digunakan adalah wawancara, angket dan tes unjuk kerja. Model pembelajaran experiential learning berorientasi industri sangat sesuai diterapkan pada pembelajaran SMK. Model pembelajaran experiential learning berorientasi industri yang diterapkan dalam dua kali ujicoba menghasilkan skor peningkatan aspek kompetensi sikap, pengetahuan dan ketrampilan.

ABSTRACT

The unemployment rate in Indonesia is still dominated by SMK graduates. Unemployment occurs because the work readiness of SMK students is low. This study aims to develop an industrial-oriented experiential learning model and test its effectiveness. This study used a research and development (R&D) design with the stages of needs analysis, internal validation and external validation. The research subjects used were 4 teachers and 34 students majoring in automotive engineering at SMK Muhammadiyah 1 Salam and 6 automotive industry practitioners. Data collection techniques used were interviews, questionnaires and performance tests. The industrial-oriented experiential learning model is very suitable to be applied to vocational learning. The industrial-oriented experiential learning model applied in two trials resulted in an increase in scores on aspects of attitude competence, knowledge and skills.

1. INTRODUCTION

Unemployment in Indonesia is still a national problem which until now has not been resolved (Hohlova & Rivža, 2021; Prayitno & Kusumawardani, 2022; Ruchba & Hadiyan, 2019; Suharti et al., 2021). Moreover, after the pandemic, economic sectors experienced a crisis which resulted in an increase in the number of unemployed (Haldar & Sethi, 2022; Su et al., 2022). The Central Statistics Agency (BPS) provides data that in August 2022, the Open Unemployment Rate (TPT) was 8.42 million people out of a total of 143.72 million people. Of these, graduates from Vocational High Schools (SMK) contributed the highest number of unemployed, namely 9.42%. This statement is inversely proportional to the purpose of SMK which is held to create a ready-to-use workforce according to their field of expertise (Burhan & Arifin, 2020; Lawitta et al., 2017). The high unemployment rate for SMK graduates is the impact of the low work readiness of SMK students (Afriadi et al., 2018; Sudarsono, 2022; Syofyan, 2022). Vocational students' work readiness is the result of the learning process in vocational schools which includes aspects of attitude, knowledge, and skills competence (Ali, 2021; Mustikawanto, 2019; Rahmah & Muslim, 2019; Yuliani & Yuniarsih, 2019). The second problem that affects low work readiness is the low ability of SMK students in analyzing problems. Vocational High School students are accustomed to doing work according to student worksheets without digging new information and knowledge from their experiences. This has an impact

on the low quality of critical thinking of vocational students in solving work problems (Cadenas et al., 2020; Smith et al., 2020; Wagiran et al., 2022).

Improvement efforts have been made by SMK administrators to increase the work readiness of SMK students. The most frequent improvement is the improvement of the learning process by developing learning models. The learning model that is currently being pressured to be implemented in SMK is the experiential learning model. The experiential learning model is a learning model that facilitates students to improve their ability to analyze problems to gain new knowledge from their experiences (Cheng et al., 2020; Dernova, 2015). The experiential learning learning model will involve students with real conditions and experiences so as to produce the desired competencies (Akhtar, 2020; Garlick, 2014; Kong, 2021; Wang et al., 2021). The experiential learning model includes, (a) Concrete Experience; (b) Reflective Observations; (c) Abstract Conceptualization; and (d) Active Experimentation. The experiential learning cycle of the learning model can be seen in Figure 1.

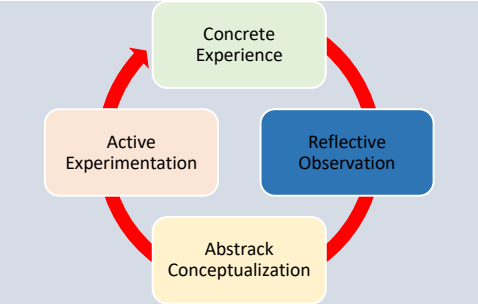

Figure 1. Experiential Learning Model Cycle(Kolb & Kolb, 2005)

The Concrete Experience stage is the stage where students are introduced to real problems/cases in the industry. Reflective Observation is a stage where students are stimulated to find solutions to problems/solutions they face. Abstract Conceptualization contains activities that stimulate students to think and make other alternatives if the first solution cannot solve the problem. Active Experimentation is a stage that provides space for students to apply alternative solutions to problems.

The experiential learning model that has been applied so far has several weaknesses. According to Arakawa (2020), McPherson (2020) and Nguyen (2022), the experiential learning model has weaknesses in terms of participation in the industrial world and the world of work. The learning experiences that have been provided to students so far have come entirely from the teacher, not the needs of the industrial world. Not only that, the work environment used is still fully carried out at school. It is better to get the optimal quality of experience, learning is carried out in the industry so that the work culture will be formed independently (Arakawa & Anme, 2020; McPherson-Geyser et al., 2020; Nguyen, 2022).

Based on the weaknesses above, researchers developed an experiential learning model that is integrated with the competencies, needs and culture of the industrial world or called the Industry Oriented Experiential Learning Model (EL+i). The EL+i model is the development of an experiential learning model in which learning is carried out in industry with competency standards according to the needs of the industrial world. The purpose of developing the EL+i model is to establish work readiness for vocational students who have aspects of industrial competence and are able to adapt to industrial work culture. The EL-Bi model is implemented in an integrated manner with the curriculum in schools, only the material provided is adjusted to job competencies needed by the industry.

2. METHODS

This research is a development research (R&D) by adopting Richey and Klein's research which aims to develop experiential learning models that can improve the work readiness of vocational students. The stages of this research consist of the stages of needs analysis, internal validation and external validation. The stages of needs analysis aim to find out the current condition of vocational learning, aspects of competency needed by the industry and the development of an industry-based learning model. The internal validation stage aims to test the feasibility of the model from the expert's point of view. While

external validation aims to determine the effectiveness of the learning model in increasing student work readiness. The stages of the research can be seen in Figure 2.

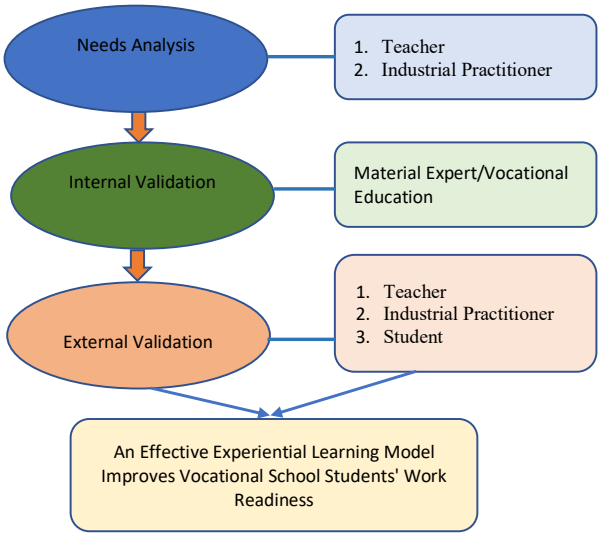

Figure 2. Research Stages(Richey, RC & Klein, 2009)

The research subjects used in this study were 4 teachers and 34 students majoring in automotive engineering at SMK Muhammadiyah 1 Salam as well as industrial practitioners from 6 light vehicle automotive repair shops. The research sites used were the Barokah workshop and the Jogjakarta Center Automotive workshop. Collecting data using interview techniques, questionnaires and performance tests. The needs analysis stage contains focus group discussion (FGD) activities whose results are explored using interview techniques. The interview guideline can be seen in Table 1.

Table 1. Interview Guidelines Grid

No	SMK teacher	Industrial Practitioner
1	Current condition of SMK graduates	Current condition of SMK graduates
2	Aspects of competence expected by teachers	Competency aspects needed by the industry/world of work.
3	Subject matter to be emphasized	Job competencies that are currently important for SMK students
4	Weaknesses of current SMK graduates	Weaknesses of current SMK graduates
5	The solution overcomes the weakness regarding the low work readiness of SMK graduates	The solution overcomes the weakness regarding the low work readiness of SMK graduates
6	The best learning model to be applied at this time and able to improve the work readiness of vocational students	The best learning model to be applied at this time and able to improve the work readiness of vocational students

The internal validation stage aims to test the feasibility of the learning model with the help of vocational education material experts. The internal validation questionnaire grid can be seen in Table 2.

Table 2. Material/Learning Model Validation Questionnaire Grid

Media Validation Questionnaire Indicator	
Model Purpose	Effectiveness in solving problems
	Compatibility with the material
Preparation	Ease in Preparing Learning Devices
Application	Easy to Understand Model

	Easy to Implement Model
Evaluation	Easy Model to Evaluate Learning Outcomes

The next stage is external validation which contains pre-test, try-out and post-test activities. This stage aims to determine the effectiveness of the learning model in increasing the work readiness of SMK students. Furthermore, from the results of internal and external validation, researchers analyzed descriptively to produce conclusions from the feasibility of questionnaires and learning models. The formula used is as follows:

$$x = \sum x/n$$

x = average score
Σ x = total respondents
n = total answer score

After being analyzed, the results of the questionnaire and practical performance tests were categorized to produce conclusions for each instrument. Categorization can be seen in Table 3.

Table 3. Categorization of Questionnaires and Practical Performance Tests

Formula	Score	Category
X≥ x +1.SBx	X ≥ 3.00	Very good
x+ SBx > x ≥ x	3.00 > X ≥ 2.50	Well
x> x ≥ x - 1.SBx	2.50 > X ≥ 2.00	Pretty good
X < x – 1.SBx	X< 2.00	Not good

(Mardapi, 2008)

X = final score
x= average score
SBx = Standard deviation
x= (1/2) (ideal max score – ideal min score)
SBx= (1/6) (ideal max score – ideal min score)
Ideal Max Score =∑item x the highest score
Ideal Min score =∑item x the lowest score

3. RESULTS AND DISCUSSION

Results

Stages of Needs Analysis

The needs analysis stage aims to determine the current condition of vocational learning, competency aspects needed by the industry and the development of an industry-based learning model. The needs analysis stage was carried out twice with FGD participants from automotive engineering vocational school teachers and automotive industry practitioners. The results of the needs analysis can be seen in Table 4.

Table 4. Needs Analysis Results

No	SMK teacher	Industrial Practitioner
1	SMK learning requires industrial participation.	SMK openly involves industry to improve the quality of SMK graduates, especially in the learning process.
2	Industry trust in SMK graduates is low. SMK graduates need to get an emphasis on soft skill competencies.	SMK graduates need to get an emphasis on soft skill competencies.
3	Aspects of competence expected by teachers include an attitude of responsibility, integrity and cooperation. Knowledge of work processes and skills regarding timely completion of work.	Aspects of competence expected by the industry include integrity, cooperation, responsibility and honesty. The knowledge needed about the work process, reading literacy and skills regarding the completeness of the work.

4	The subject matter that must be emphasized is related to petrol motorbike tune-ups, EFI, AC systems and painting.	Job competencies that are urgently needed by the industry today are gasoline engine maintenance, EFI system tune-ups and automotive electricity
5	Vocational High Schools need a learning model that provides opportunities for students to gain knowledge and experience from the industry	SMK learning should be aligned with the needs of the world of work and industry.

From the results of the needs analysis, it can be concluded that SMK and industry agree: (a) The main problem regarding SMK graduates is their job readiness, especially in the soft skills aspect. (b) Aspects of competence that must be owned by SMK graduates are aspects of attitude competence which include attitudes of integrity, responsibility, cooperation and honesty. Knowledge includes knowledge about reading literacy and the field of work. Skills include completeness in completing work. (c) Developing a learning model that can align with industry needs by providing opportunities for industry to participate in the SMK learning process. The results of the needs analysis can be seen in Table 5 and Figure 3.

Table 5. Competency Aspects Required by the Industrial World

Performance Test Aspects (Practice Examination)		Description
Attitude	Integrity	Consistent in carrying out work
	Responsibility	Be serious in carrying out work
	Cooperation	Work together with others
	Honesty	Can be trusted
Knowledge	Reading literacy in the field of work	Knowledge seeking references
Skills	Completeness in completing work	Complete all work properly and finish on time

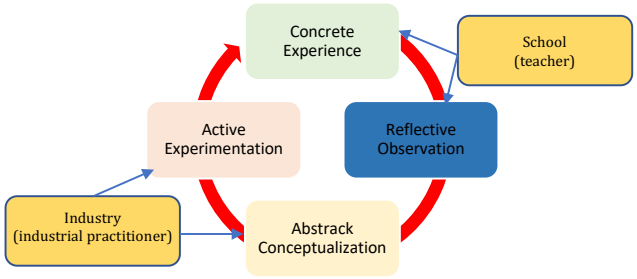

Figure 3. Conceptual Industry-Oriented Experiential Learning (EL+i) Learning Model

Internal Validation

The internal validation stage aims to test the feasibility of the model from the expert's point of view. The results of expert input are summarized and used as a basis for improving the learning model. The learning model experts used consist of one academician and one industry. Experts state that the learning model is well applied to learning in SMK. The results of an internal validation questionnaire from experts, model stages and pictures of hypothetical industrial-oriented experiential learning (EL+i) models can be seen in Table 6, Table 7and Figure 4.

Table 6. Internal Validation Results from Experts

	Media Validation Questionnaire Indicator	Average Score
Model Purpose	Effectiveness in solving problems	2.60
	Compatibility with the material	2.60
Preparation	Ease in Preparing Learning Devices	2.80
Application	Easy to Understand Model	2.60
	Easy to Implement Model	2.80
Evaluation	Easy Model to Evaluate Learning Outcomes	2.80

Table 7. Stages of Industry-Oriented Experiential Learning (EL+i) Learning Model

No	Stages	Activity Description	Perpetrator
1	Concrete Experience (looking for new experiences and knowledge)	Learners observe about problems that exist in the environment or are given by teachers/industrial practitioners	Industrial Practitioner
2	Reflective Observation (observation)	Learners are stimulated to find solutions and problem solving of the problems they find/face. Solutions are obtained from various data sources, literature and references.	Industrial practitioners and teachers
3	Abstract Conceptualization (thinking)	Students think about compiling problem-solving steps in worksheets.	Industrial practitioners and teachers
4	Active Experimentation (Action)	Students apply student worksheets.	Industrial Practitioner

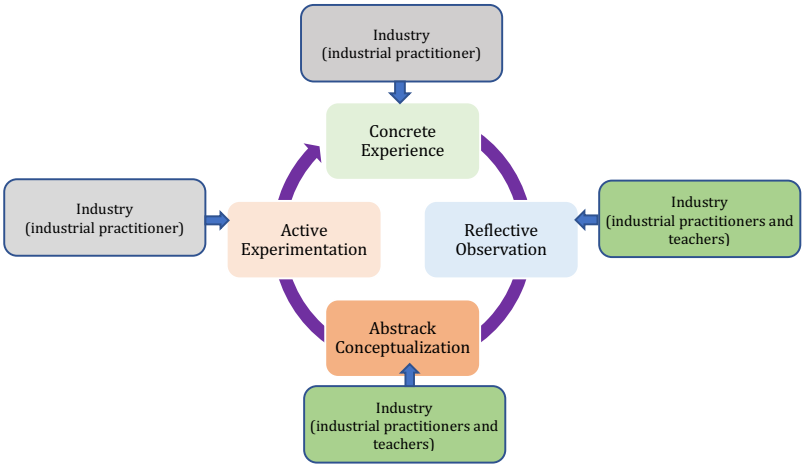

Figure 4. Hypothetical Industry-Oriented Experiential Learning (EL+i) Model

External Validation

The external validation stage aims to test the effectiveness of the learning model in increasing student work readiness. External validation contains the implementation of the EL+i model which consists of pretest, trial and posttest. The results of external validation and improvement of each trial can be seen in Table 8 and Figure 5.

Table 8. Results of Implementing the EL+i Model

Aspect	Competency indicator	Pretest	Trials	Posttest
Attitude	integrity	1,9	2	2,8
	Responsibility	1.5	2,2	3
	Cooperation	1.75	2,2	3,2
	Honesty	1,9	2,2	3,2
Knowledge Skills	Reading Literacy in the Field of Work	2	2,4	3,6
	Completeness in completing work	2,2	2,4	3,6

Average score	1,9	2,2	3,2

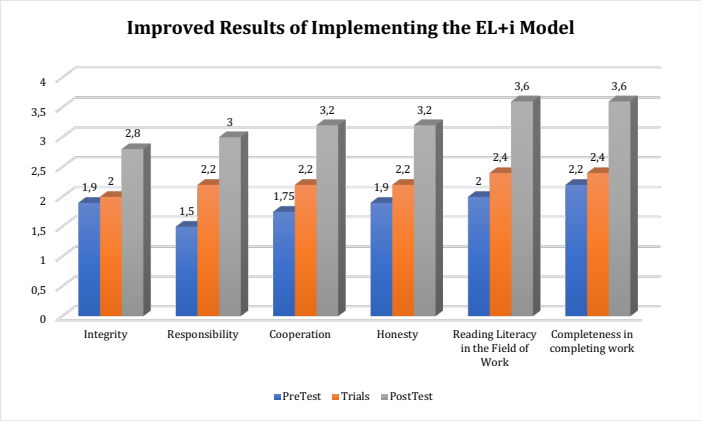

Figure 5. Improving the Result of Implementing the EL+i Model

Discussion

ModelLearningIndustry-Oriented Experiential Learning (EL+i) is a learning model that was developed from the experiential learning model so far. The difference lies in aspects of industry-based competence, industry competency standards, participation of industry practitioners and the learning process implemented in the industry. The EL+i model that is integrated with industry-based and industry-standard competency aspects will produce an effective learning pattern. This is in accordance with research from Singgih Prastawa (2019) which states that experietial learning models integrated with the industrial world will increase competence and effective thinking patterns in analyzing and solving problems (Prastawa et al., 2020). Not only that, industrial participation with direct industrial learning in the learning process will provide real and up-to-date experiences for SMK students. This is in accordance with the results of Dwi Rahdiyanto's research (2019) which states that the introduction of industry-standard experience and work processes has a very good influence on the work readiness of SMK students(Rahdiyanta et al., 2019). Pamungkas (2020) states that the industrial-oriented experiential learning model shapes the character and competencies expected of the industrial world. Students will be faced with patterns, standards and aspects of competence that are always evolving (Pamungkas et al., 2020)

ModelLearningIndustry-Oriented Experiential Learning (EL+i) which was applied twice showed the result that the EL+i model was well applied to vocational learning and was able to increase the effectiveness of vocational students' work readiness. The effectiveness of increased work readiness resulted from an increased average score of aspects of attitudes, knowledge and skills competencies. The Industry-Oriented Experiential Learning (EL+i) learning model is proven to be able to improve the competency aspects of integrity and honesty. Integrity is a consistent attitude in carrying out tasks. While honesty is the attitude of being trusted. Attitudes of integrity and honesty are very difficult for vocational teachers to form so far. This statement is in accordance with Santoso's research (2020) and Su' ud (2019) which concludes that the toughest problem for a vocational education is instilling character, especially related to integrity and honesty. Learning patterns are needed that position students as workers so that the spirit of integrity and honesty can be monitored (M. Suud et al., 2019; Santoso et al., 2020).

ModelEL+i is very suitable to form an attitude of responsibility and cooperation. The increase in the attitude of responsibility, namely being serious in carrying out work and the attitude of cooperation, namely working together with others, has increased in two applications. Increased responsibility and collaboration are more easily formed with practical learning models and integrated with industry. This statement is supported by Sutiman (2022), learning that focuses on the integration of the school curriculum and the industrial world will form an attitude of responsibility towards work and be able to cooperate with various parties in the work environment (Sutiman et al., 2022).

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The EL+i model is very suitable to be applied to form aspects of knowledge competence with reference seeking competence. In the EL+i model stage, there are stages of finding solutions to the problems encountered. Activities carried out can be in the form of looking for references via handbooks or the internet. This stage indirectly supports the formation of knowledge competency aspects. This statement is in accordance with Zainun Misbah's research (2020) which states that literacy knowledge and work field references will be well formed by direct practice in the work industry (Misbah et al., 2020). Furthermore, the EL+i model is suitable for forming aspects of competence in skillscomplete all the work well and finished on time. Industry-integrated learning forms productive abilities for SMK students. The introduction, implementation, and evaluation of learning with experience, competency standards and the participation of practitioners in the industry form optimal competencies. This statement is in accordance with the results of research by Melovic (2019) and Castañer (2020) that learning with the environment and real work in the industry will shape students' ability to know the ideal and timeliness in completing work (Castañer & Oliveira, 2020; Melovic et al., 2019)

4. CONCLUSION

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The Industry-Oriented Experiential Learning Learning Model (EL+i) is suitable to be applied to vocational learning. The EL+i model that is applied properly will effectively improve the competency aspects of work readiness for vocational students which include attitudes, knowledge and skills. The EL+i model has the advantages found inaspects of competency based on industry needs, competency standards used to measure the success of learning adapted to the industry, the learning process is directly provided by the participation of industry practitioners and the learning process is carried out in the industry.The EL+i model has weaknesses, namely it requires preparation of infrastructure and funding in seeking and establishing collaboration with industry.

The Industry-Oriented Experiential Learning (EL+i) Learning Model requires good planning on the part of the Vocational High School organizers to select reference industries that meet graduation criteria and are able to collaborate actively. Not only that, SMKs thoroughly prepare administration, complete infrastructure facilities in SMKs and industry so that after implementing the EL+i model, SMKs can implement it independently in schools according to industrial follow-up plans. Industries have different competency needs so that each implementation of the EL+i model is prepared for a needs analysis stage to determine competency aspects and competency standards needed by the industry.

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Development of an Industry-Oriented Experiential Learning (EL+i) Learning Model to Increase the Job Readiness of Vocational High School Students

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ABSTRACT

Tingkat pengangguran di Indonesia masih didominasi dari lulusan SMK. Pengangguran terjadi karena kesiapan kerja siswa SMK yang rendah. Penelitian ini bertujuan mengembangkan model pembelajaran experiential learning berorientasi industri dan menguji keefektifannya. Penelitian ini menggunakan desain penelitian dan pengembangan (R&D) dengan tahapan analisis kebutuhan, validasi internal dan validasi eksternal. Subyek penelitian yang digunakan adalah 4 guru, 34 siswa jurusan teknik otomotif SMK Muhammadiyah 1 Salam dan 6 praktisi industri otomotif. Teknik pengumpulan data yang digunakan adalah wawancara, angket dan tes unjuk kerja. Model pembelajaran experiential learning berorientasi industri sangat sesuai diterapkan pada pembelajaran SMK. Model pembelajaran experiential learning berorientasi industri yang diterapkan dalam dua kali ujicoba menghasilkan skor peningkatan aspek kompetensi sikap, pengetahuan dan ketrampilan.

ABSTRACT

The unemployment rate in Indonesia is still dominated by SMK graduates. Unemployment occurs because the work readiness of SMK students is low. This study aims to develop an industrial-oriented experiential learning model and test its effectiveness. This study used a research and development (R&D) design with the stages of needs analysis, internal validation and external validation. The research subjects used were 4 teachers and 34 students majoring in automotive engineering at SMK Muhammadiyah 1 Salam and 6 automotive industry practitioners. Data collection techniques used were interviews, questionnaires and performance tests. The industrial-oriented experiential learning model is very suitable to be applied to vocational learning. The industrial-oriented experiential learning model applied in two trials resulted in an increase in scores on aspects of attitude competence, knowledge and skills.

7. INTRODUCTION

Unemployment in Indonesia is still a national problem which until now has not been resolved (Hohlova & Rivža, 2021; Prayitno & Kusumawardani, 2022; Ruchba & Hadiyan, 2019; Suharti et al., 2021). Moreover, after the pandemic, economic sectors experienced a crisis which resulted in an increase in the number of unemployed (Haldar & Sethi, 2022; Su et al., 2022). The Central Statistics Agency (BPS) provides data that in August 2022, the Open Unemployment Rate (TPT) was 8.42 million people out of a total of 143.72 million people. Of these, graduates from Vocational High Schools (SMK) contributed the highest number of unemployed, namely 9.42%. This statement is inversely proportional to the purpose of SMK which is held to create a ready-to-use workforce according to their field of expertise (Burhan & Arifin, 2020; Lawitta et al., 2017). The high unemployment rate for SMK graduates is the impact of the low work readiness of SMK students (Afriadi et al., 2018; Sudarsono, 2022; Syofyan, 2022). Vocational students' work readiness is the result of the learning process in vocational schools which includes aspects of attitude, knowledge, and skills competence (Ali, 2021; Mustikawanto, 2019; Rahmah & Muslim, 2019; Yuliani & Yuniarsih, 2019). The second problem that affects low work readiness is the low ability of SMK students in analyzing problems. Vocational High School students are accustomed to doing work according to student worksheets without digging new information and knowledge from their experiences. This has an impact

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on the low quality of critical thinking of vocational students in solving work problems (Cadenas et al., 2020; Smith et al., 2020; Wagiran et al., 2022).

Improvement efforts have been made by SMK administrators to increase the work readiness of SMK students. The most frequent improvement is the improvement of the learning process by developing learning models. The learning model that is currently being pressured to be implemented in SMK is the experiential learning model. The experiential learning model is a learning model that facilitates students to improve their ability to analyze problems to gain new knowledge from their experiences (Cheng et al., 2020; Dernova, 2015). The experiential learning learning model will involve students with real conditions and experiences so as to produce the desired competencies (Akhtar, 2020; Garlick, 2014; Kong, 2021; Wang et al., 2021). The experiential learning model includes, (a) Concrete Experience; (b) Reflective Observations; (c) Abstract Conceptualization; and (d) Active Experimentation. The experiential learning cycle of the learning model can be seen in Figure 1.

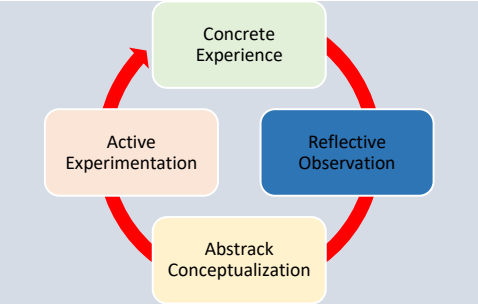

Figure 1. Experiential Learning Model Cycle(Kolb & Kolb, 2005)

The Concrete Experience stage is the stage where students are introduced to real problems/cases in the industry. Reflective Observation is a stage where students are stimulated to find solutions to problems/solutions they face. Abstract Conceptualization contains activities that stimulate students to think and make other alternatives if the first solution cannot solve the problem. Active Experimentation is a stage that provides space for students to apply alternative solutions to problems.

The experiential learning model that has been applied so far has several weaknesses. According to Arakawa (2020), McPherson (2020) and Nguyen (2022), the experiential learning model has weaknesses in terms of participation in the industrial world and the world of work. The learning experiences that have been provided to students so far have come entirely from the teacher, not the needs of the industrial world. Not only that, the work environment used is still fully carried out at school. It is better to get the optimal quality of experience, learning is carried out in the industry so that the work culture will be formed independently (Arakawa & Anme, 2020; McPherson-Geyser et al., 2020; Nguyen, 2022).

Based on the weaknesses above, researchers developed an experiential learning model that is integrated with the competencies, needs and culture of the industrial world or called the Industry Oriented Experiential Learning Model (EL+i). The EL+i model is the development of an experiential learning model in which learning is carried out in industry with competency standards according to the needs of the industrial world. The purpose of developing the EL+i model is to establish work readiness for vocational students who have aspects of industrial competence and are able to adapt to industrial work culture. The EL-Bi model is implemented in an integrated manner with the curriculum in schools, only the material provided is adjusted to job competencies needed by the industry.

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8. METHODS

This research is a development research (R&D) by adopting Richey and Klein's research which aims to develop experiential learning models that can improve the work readiness of vocational students. The stages of this research consist of the stages of needs analysis, internal validation and external validation. The stages of needs analysis aim to find out the current condition of vocational learning, aspects of competency needed by the industry and the development of an industry-based learning model. The internal validation stage aims to test the feasibility of the model from the expert's point of view. While

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external validation aims to determine the effectiveness of the learning model in increasing student work readiness. The stages of the research can be seen in Figure 2.

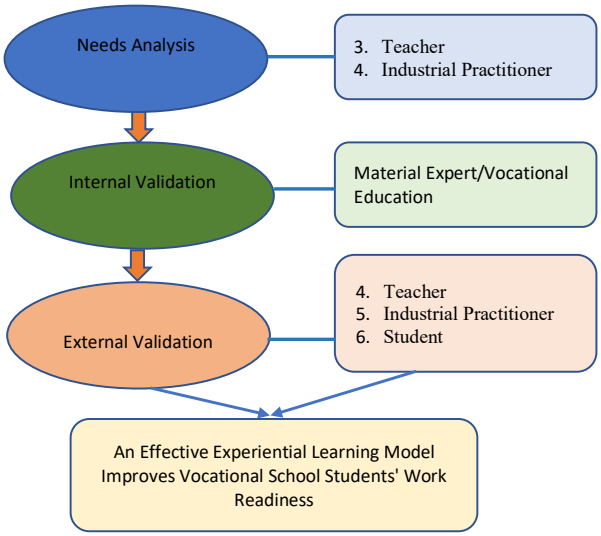

Figure 2. Research Stages(Richey, RC & Klein, 2009)

The research subjects used in this study were 4 teachers and 34 students majoring in automotive engineering at SMK Muhammadiyah 1 Salam as well as industrial practitioners from 6 light vehicle automotive repair shops. The research sites used were the Barokah workshop and the Jogjakarta Center Automotive workshop. Collecting data using interview techniques, questionnaires and performance tests. The needs analysis stage contains focus group discussion (FGD) activities whose results are explored using interview techniques. The interview guideline can be seen in Table 1.

Table 1. Interview Guidelines Grid

No	SMK teacher	Industrial Practitioner
1	Current condition of SMK graduates	Current condition of SMK graduates
2	Aspects of competence expected by teachers	Competency aspects needed by the industry/world of work.
3	Subject matter to be emphasized	Job competencies that are currently important for SMK students
4	Weaknesses of current SMK graduates	Weaknesses of current SMK graduates
5	The solution overcomes the weakness regarding the low work readiness of SMK graduates	The solution overcomes the weakness regarding the low work readiness of SMK graduates
6	The best learning model to be applied at this time and able to improve the work readiness of vocational students	The best learning model to be applied at this time and able to improve the work readiness of vocational students

The internal validation stage aims to test the feasibility of the learning model with the help of vocational education material experts. The internal validation questionnaire grid can be seen in Table 2.

Table 2. Material/Learning Model Validation Questionnaire Grid

Media Validation Questionnaire Indicator	
Model Purpose	Effectiveness in solving problems
	Compatibility with the material
Preparation	Ease in Preparing Learning Devices
Application	Easy to Understand Model

	Easy to Implement Model
Evaluation	Easy Model to Evaluate Learning Outcomes

The next stage is external validation which contains pre-test, try-out and post-test activities. This stage aims to determine the effectiveness of the learning model in increasing the work readiness of SMK students. Furthermore, from the results of internal and external validation, researchers analyzed descriptively to produce conclusions from the feasibility of questionnaires and learning models. The formula used is as follows:

$$x = \sum x/n$$

x = average score
Σ x = total respondents
n = total answer score

After being analyzed, the results of the questionnaire and practical performance tests were categorized to produce conclusions for each instrument. Categorization can be seen in Table 3.

Table 3. Categorization of Questionnaires and Practical Performance Tests

Formula	Score	Category
X≥ x +1.SBx	X ≥ 3.00	Very good
x+ SBx > x ≥ x	3.00 > X ≥ 2.50	Well
x> x ≥ x - 1.SBx	2.50 > X ≥ 2.00	Pretty good
X < x – 1.SBx	X< 2.00	Not good

(Mardapi, 2008)

X = final score
x= average score
SBx = Standard deviation
x= (1/2) (ideal max score – ideal min score)
SBx= (1/6) (ideal max score – ideal min score)
Ideal Max Score =∑item x the highest score
Ideal Min score =∑item x the lowest score

9. RESULTS AND DISCUSSION

Results

Stages of Needs Analysis

The needs analysis stage aims to determine the current condition of vocational learning, competency aspects needed by the industry and the development of an industry-based learning model. The needs analysis stage was carried out twice with FGD participants from automotive engineering vocational school teachers and automotive industry practitioners. The results of the needs analysis can be seen in Table 4.

Table 4. Needs Analysis Results

No	SMK teacher	Industrial Practitioner
1	SMK learning requires industrial participation.	SMK openly involves industry to improve the quality of SMK graduates, especially in the learning process.
2	Industry trust in SMK graduates is low. SMK graduates need to get an emphasis on soft skill competencies.	SMK graduates need to get an emphasis on soft skill competencies.
3	Aspects of competence expected by teachers include an attitude of responsibility, integrity and cooperation. Knowledge of work processes and skills regarding timely completion of work.	Aspects of competence expected by the industry include integrity, cooperation, responsibility and honesty. The knowledge needed about the work process, reading literacy and skills regarding the completeness of the work.

4	The subject matter that must be emphasized is related to petrol motorbike tune-ups, EFI, AC systems and painting.	Job competencies that are urgently needed by the industry today are gasoline engine maintenance, EFI system tune-ups and automotive electricity
5	Vocational High Schools need a learning model that provides opportunities for students to gain knowledge and experience from the industry	SMK learning should be aligned with the needs of the world of work and industry.

From the results of the needs analysis, it can be concluded that SMK and industry agree: (a) The main problem regarding SMK graduates is their job readiness, especially in the soft skills aspect. (b) Aspects of competence that must be owned by SMK graduates are aspects of attitude competence which include attitudes of integrity, responsibility, cooperation and honesty. Knowledge includes knowledge about reading literacy and the field of work. Skills include completeness in completing work. (c) Developing a learning model that can align with industry needs by providing opportunities for industry to participate in the SMK learning process. The results of the needs analysis can be seen in Table 5 and Figure 3.

Table 5. Competency Aspects Required by the Industrial World

Performance Test Aspects (Practice Examination)		Description
Attitude	Integrity	Consistent in carrying out work
	Responsibility	Be serious in carrying out work
	Cooperation	Work together with others
	Honesty	Can be trusted
Knowledge	Reading literacy in the field of work	Knowledge seeking references
Skills	Completeness in completing work	Complete all work properly and finish on time

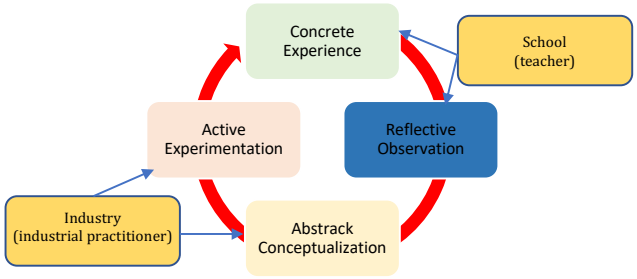

Figure 3. Conceptual Industry-Oriented Experiential Learning (EL+i) Learning Model

Internal Validation

The internal validation stage aims to test the feasibility of the model from the expert's point of view. The results of expert input are summarized and used as a basis for improving the learning model. The learning model experts used consist of one academician and one industry. Experts state that the learning model is well applied to learning in SMK. The results of an internal validation questionnaire from experts, model stages and pictures of hypothetical industrial-oriented experiential learning (EL+i) models can be seen in Table 6, Table 7and Figure 4.

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Table 6. Internal Validation Results from Experts

	Media Validation Questionnaire Indicator	Average Score
Model Purpose	Effectiveness in solving problems	2.60
	Compatibility with the material	2.60
Preparation	Ease in Preparing Learning Devices	2.80
Application	Easy to Understand Model	2.60
	Easy to Implement Model	2.80
Evaluation	Easy Model to Evaluate Learning Outcomes	2.80

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Table 7. Stages of Industry-Oriented Experiential Learning (EL+i) Learning Model

No	Stages	Activity Description	Perpetrator
1	Concrete Experience (looking for new experiences and knowledge)	Learners observe about problems that exist in the environment or are given by teachers/industrial practitioners	Industrial Practitioner
2	Reflective Observation (observation)	Learners are stimulated to find solutions and problem solving of the problems they find/face. Solutions are obtained from various data sources, literature and references.	Industrial practitioners and teachers
3	Abstract Conceptualization (thinking)	Students think about compiling problem-solving steps in worksheets.	Industrial practitioners and teachers
4	Active Experimentation (Action)	Students apply student worksheets.	Industrial Practitioner

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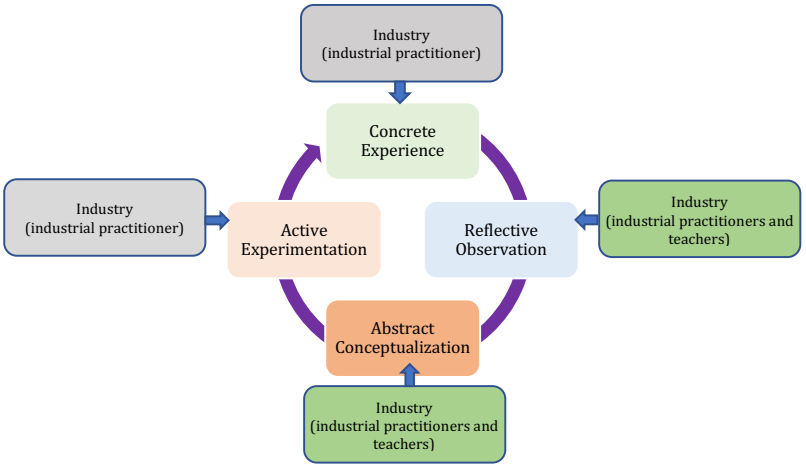

Figure 4. Hypothetical Industry-Oriented Experiential Learning (EL+i) Model

External Validation

The external validation stage aims to test the effectiveness of the learning model in increasing student work readiness. External validation contains the implementation of the EL+i model which consists of pretest, trial and posttest. The results of external validation and improvement of each trial can be seen in Table 8 and Figure 5.

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Table 8. Results of Implementing the EL+i Model

Aspect	Competency indicator	Pretest	Trials	Posttest
Attitude	Integrity	1,9	2	2,8
	Responsibility	1.5	2,2	3
	Cooperation	1.75	2,2	3,2
	Honesty	1,9	2,2	3,2
Knowledge Skills	Reading Literacy in the Field of Work	2	2,4	3,6
	Completeness in completing work	2,2	2,4	3,6

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Average score	1,9	2,2	3,2

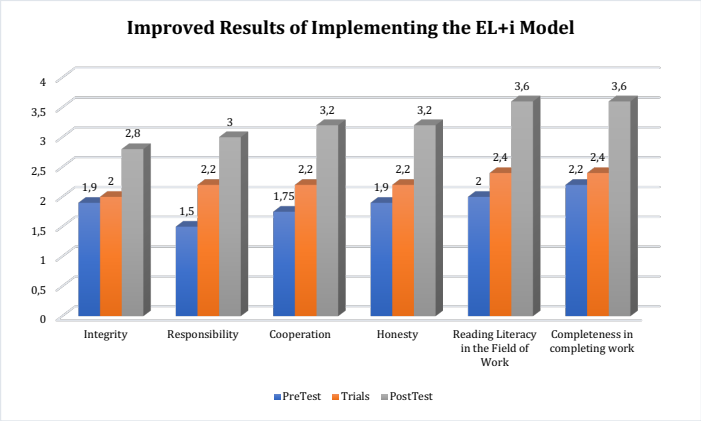

Figure 5. Improving the Result of Implementing the EL+i Model

Discussion

ModelLearningIndustry-Oriented Experiential Learning (EL+i) is a learning model that was developed from the experiential learning model so far. The difference lies in aspects of industry-based competence, industry competency standards, participation of industry practitioners and the learning process implemented in the industry. The EL+i model that is integrated with industry-based and industry-standard competency aspects will produce an effective learning pattern. This is in accordance with research from Singgih Prastawa (2019) which states that experietial learning models integrated with the industrial world will increase competence and effective thinking patterns in analyzing and solving problems (Prastawa et al., 2020). Not only that, industrial participation with direct industrial learning in the learning process will provide real and up-to-date experiences for SMK students. This is in accordance with the results of Dwi Rahdiyanto's research (2019) which states that the introduction of industry-standard experience and work processes has a very good influence on the work readiness of SMK students(Rahdiyanta et al., 2019). Pamungkas (2020) states that the industrial-oriented experiential learning model shapes the character and competencies expected of the industrial world. Students will be faced with patterns, standards and aspects of competence that are always evolving (Pamungkas et al., 2020)

ModelLearningIndustry-Oriented Experiential Learning (EL+i) which was applied twice showed the result that the EL+i model was well applied to vocational learning and was able to increase the effectiveness of vocational students' work readiness. The effectiveness of increased work readiness resulted from an increased average score of aspects of attitudes, knowledge and skills competencies. The Industry-Oriented Experiential Learning (EL+i) learning model is proven to be able to improve the competency aspects of integrity and honesty. Integrity is a consistent attitude in carrying out tasks. While honesty is the attitude of being trusted. Attitudes of integrity and honesty are very difficult for vocational teachers to form so far. This statement is in accordance with Santoso's research (2020) and Su' ud (2019) which concludes that the toughest problem for a vocational education is instilling character, especially related to integrity and honesty. Learning patterns are needed that position students as workers so that the spirit of integrity and honesty can be monitored (M. Suud et al., 2019; Santoso et al., 2020).

ModelEL+i is very suitable to form an attitude of responsibility and cooperation. The increase in the attitude of responsibility, namely being serious in carrying out work and the attitude of cooperation, namely working together with others, has increased in two applications. Increased responsibility and collaboration are more easily formed with practical learning models and integrated with industry. This statement is supported by Sutiman (2022), learning that focuses on the integration of the school curriculum and the industrial world will form an attitude of responsibility towards work and be able to cooperate with various parties in the work environment (Sutiman et al., 2022).

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The EL+i model is very suitable to be applied to form aspects of knowledge competence with reference seeking competence. In the EL+i model stage, there are stages of finding solutions to the problems encountered. Activities carried out can be in the form of looking for references via handbooks or the internet. This stage indirectly supports the formation of knowledge competency aspects. This statement is in accordance with Zainun Misbah's research (2020) which states that literacy knowledge and work field references will be well formed by direct practice in the work industry (Misbah et al., 2020). Furthermore, the EL+i model is suitable for forming aspects of competence in skillscomplete all the work well and finished on time. Industry-integrated learning forms productive abilities for SMK students. The introduction, implementation, and evaluation of learning with experience, competency standards and the participation of practitioners in the industry form optimal competencies. This statement is in accordance with the results of research by Melovic (2019) and Castañer (2020) that learning with the environment and real work in the industry will shape students' ability to know the ideal and timeliness in completing work (Castañer & Oliveira, 2020; Melovic et al., 2019)

10.CONCLUSION

The Industry-Oriented Experiential Learning Learning Model (EL+i) is suitable to be applied to vocational learning. The EL+i model that is applied properly will effectively improve the competency aspects of work readiness for vocational students which include attitudes, knowledge and skills. The EL+i model has the advantages found inaspects of competency based on industry needs, competency standards used to measure the success of learning adapted to the industry, the learning process is directly provided by the participation of industry practitioners and the learning process is carried out in the industry.The EL+i model has weaknesses, namely it requires preparation of infrastructure and funding in seeking and establishing collaboration with industry.

The Industry-Oriented Experiential Learning (EL+i) Learning Model requires good planning on the part of the Vocational High School organizers to select reference industries that meet graduation criteria and are able to collaborate actively. Not only that, SMKs thoroughly prepare administration, complete infrastructure facilities in SMKs and industry so that after implementing the EL+i model, SMKs can implement it independently in schools according to industrial follow-up plans. Industries have different competency needs so that each implementation of the EL+i model is prepared for a needs analysis stage to determine competency aspects and competency standards needed by the industry.

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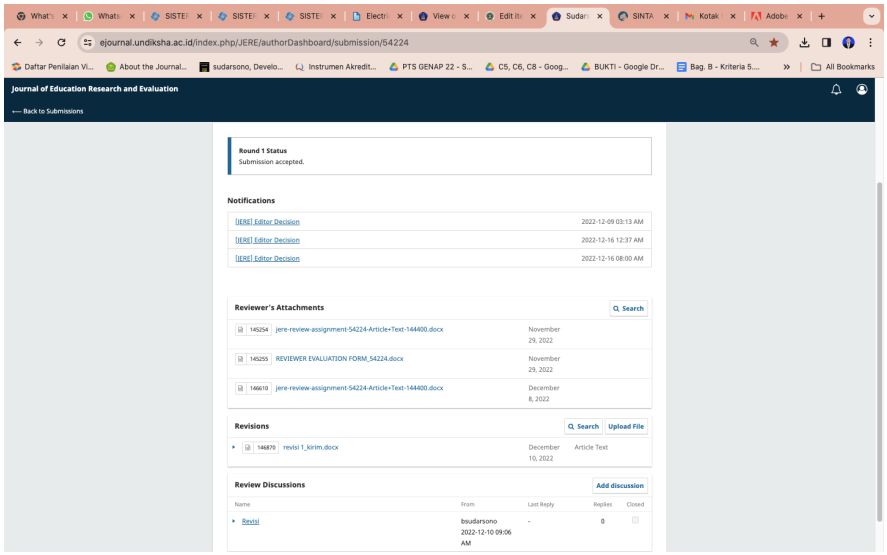
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