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Development of Worksheets on Creative Product Learning and Entrepreneurship in Indonesia's Vocational Education & Training Schools.

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ABSTRACT

This research is a research and development (R & D) that aims to analyse and develop Problem-Based Student Activity Sheets/PBSAS using android in the subjects of Creative Products Learning and Entrepreneurship (CPLE) in Vocational Education & Training/VET School that meets the proper and effective requirements. The development of PBSAS using the ADDIE model includes analysing, designing, developing, implementing, and evaluating. Research location conducted at VET School Negeri 2 Cilacap with sample study participant educate XI level majoring in Mechanical Engineering (27 participants educate), with type study experiment, one group pretest-posttest design. retrieval technique sample that is simple random sampling. Data analysis techniques are carried out qualitative and quantitative. Analysis qualitative conducted to results related to observations and interviews with analysis needs. Whereas analysis quantitative was conducted on data on the feasibility and effectiveness of PBSAS on CPLE lessons in VET School. PBSAS implementation of CPLE lessons at VET School is not yet in accordance with the hope, because students still experience confusion on PBSAS instructions that have not been clear. PBSAS was developed served in google slide form, students could work on the PBSAS to edit it on the slide shared by the teacher and containing material in the form of animated videos. PBSAS on CPLE lessons at VET School has high effectiveness, demonstrated with the value of N Gain score is 0.749 and strong.

Introduction

VET School graduates are the highest contributor to the Open Unemployment Rate (OUR) compared to graduate-level education other. This thing as reported in BPS news reported that OUR from VET School graduates are 22.34% in 2022 (BPS, 2022). Entrepreneurship is the right solution to overcome the unemployment problem (Diah & Patria, 2015). So, from that need existence work done so that entrepreneurship could be one choice for VET School graduates.

Entrepreneurship is built through CPLE learning. CPLE learning is expected capable bring up character entrepreneur participants to educate, so more ready for entrepreneurship later day. Entrepreneurship education aims to embed the ability to entrepreneurship and the intention to increase the prospect of career entrepreneurship (Prophet, Walmsley, Liñán, Akhtar, & Neame, 2018). Challenges faced is how system learning can develop self-participant education in things, skills, attributes, all at once characteristics behavior Entrepreneur (Oseni, 2017) because creativity and ability to come up with new ideas is one owned character candidate entrepreneur (Majkova & Kljucnikov, 2017). Participants learn more creative, proactive, and ready standby possible for starting alone a business (Hu, Wang, Zhang, & Bin, 2018). Learning entrepreneurship needs a learning model character student-centered and more learning process with Emphasis on ability reasoning (Hulaikah, 2019). The supportive learning model creates capable graduates who think critically and are capable solve problems, one of them is learning based problem or problem-based learning (PBL) (Dring, 2019) In learning-based problems, the teacher has the role motivate students for involved in solving problem (Arends, 2013). From the description above see that learning-based problems involve participants educated by active. Participants educate not accept theory lessons solely from the teacher but attempted to dig and develop alone. Thereby expecting participants educate and more motivated to learn and know meaningfulness from what they learned. Learning outcomes obtained not only in the form of enhanced knowledge but also improve skills think. The design and implementation of an entrepreneurship curriculum at the secondary or even primary level, which focuses on the implementation level of the preparation for self-employment, could be useful (Zenner, 2017).

Interest study participants educate in learning entrepreneurship comparable with teacher creativity in teaching (Rami & Supardi, 2019). Study Sulistyowati (2017) proves that the use of relevant and interesting learning media in CPLE learning at School will increase interest in participants' education in CPLE learning. Participant education could be more active in completing a problem and with participant PBSAS assistance education can also find new ideas for solving problems as well as answer them with methods they alone. Assisted learning with PBSAS and learning-based problem more could spur students to think creatively (Muthoharoh, Kirna, & Indrawati, 2017). Participants learn more creative, proactive, and ready standby possible for starting alone the business (Hu et al., 2018). Sandirasegarane (2016) state that Context-Driven Entrepreneurial Education in Vocational School will help empower local communities to improvetheir economic independence, sustainability, diversity, and productivity by expanding so-cial welfare, and creating new jobs and markets.

Collaboration participants learn and skill entrepreneurs easy trained with PBSAS. the PBSAS is

used with consideration of the characteristics of participant education, meaning that PBSAS can be used by participants to educate at level ability varied learning, because in the PBSAS there is theory short, and clear syntax (Naila, Jatmiko, & Sudibyo, 2019). PBSAS can increase the involvement of participant educate in learning and the use of PBSAS has influenced positively to involvement participants educate inside learning (Rahmadatillah, 2020). because of that, based on some facts and results study previously who had described above, research and development of PBSAS - based problems in CPLE learning for VET School students.

Method

The method section structure should: describe the materials used in the study, explain how the materials were prepared for the study, describe the research protocol, explain how measurements were made and what calculations were performed, and state which statistical tests were done to analyze the data.

Result and Discussion

The development model to be used is the ADDIE model. As for the stages in the ADDIE development model is Analyze, Design, Develop, Implement & Evaluate (Branch, 2009) . The research location of VET School Negeri 2 Cilacap with sample study participant educate level XI majoring in Mechanical Engineering year the 2022/2023 academic year as many as 27 participants educate.

Stages development they could explained as following:

a. Analyze Stage

At this analysis stage conducted identification suitable product with target participant educate, aim learn, identify content/material learning as well as identify environment learning and delivery strategy in learning. Analysis performed include:

1) Analysis needs

Now to do analysis needs studied problems learning that happens like happening gap Among destination learning with results evaluation, dissatisfaction participant educate, or participant educate no challenged for follow CPLE learning. Analysis needs are also done to aspect individual participant educate concerning attitudes, knowledge and skills possessed as capital for follow CPLE learning. Next is also done analysis facilities and infrastructure and support School to CPLE learning.

2) Analysis participants educate

Participants educate as center learning, because that participant educate Becomes consideration main role in the development of PBSAS. Analysis participant educate including knowledge initial, sum available time, skills use devices and specifications owned device participant

educate. Analysis the required for designing activities in PBSAS.

3) Analysis curriculum

Analysis curriculum meant to be determined preparation of the required PBSAS. Analysis curriculum could conduct with see Theory the subject being taught and observing competencies that must be owned participant educate.

b. Design stage

Aim for designing learning media in form of PBSAS based problem CPLE material. Design done consist of cover, instructions learning, competence base, indicator achievement competence, information support, tasks, and steps work, as well assessment. PBSAS based problem designed in *file* format presentation, shared to participant educate with utilise facilities on *Google Slides*, so that participant educate could working on PBSAS *online*.

c. Development stage

Development stage aims for produce PBSAS based decent problem. Stage this includes the PBSAS feasibility test conducted by experts' material, expert learning, and media experts. Eligibility tests this useful for disclose level validity of the developed PBSAS. Next, revise conducted for improve PBSAS according to the advice of the validator. Instruments used that is questionnaire PBSAS assessment includes content, language, presentation, and conformity of PBSAS with learning-based problem.

d. Implementation stage

The implementation stage aims for apply PBSAS to the environment real. Design study use *One Group Pre-test Post-tests Design*, can depicted as following:

Table 1. Research Design One Group Pretest Posttest Design

Pre-test	Treatment	*post-test*
O 1	X	O2

Description:

O1 : Pretest results before given X treatment

O2 : Post test results after given X treatment

e. Evaluate stage

The evaluation stage is carried out data analysis of PBSAS -based effectiveness problem using t test. With test effectiveness the treatment given to the results of the pretest and posttest, can declared treatment the effective or no. Treatment in Thing this is use of -based PBSAS problem in CPLE learning. Instruments used at stage this is pretest and posttest questions. Earning score processed with SPSS 22, as for analysis carried out among others.

RESULTS AND DISCUSSION

Result

Based on evaluation expert the so could concluded that the PBSAS is based on problem is worthy used in CPLE learning in VET School, with suggestions for improvement from validators. Next obtained by PBSAS as following: CPLE learning will effective if participant educate have interests, motivations, and desires for involved. Interest study participant educate comparable with teacher creativity in teach. Quality teacher professional look with ability manage class and teaching by effective where the teacher can teach participant educate for dominate theory learning in accordance with demands curriculum.

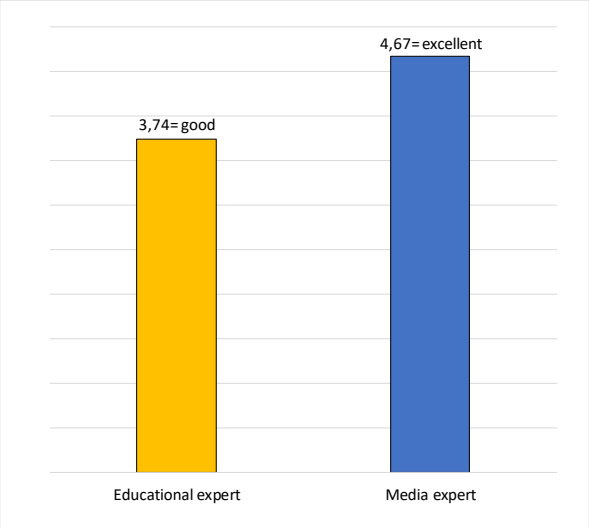

Fig 1: Bar diagram of validator assessment score

1. Implementation the use of PBSAS in CPLE learning

Problem CPLE learning that happened During this is lack of involvement participant educate. Less involvement result in participant educates have low understanding to theory learning. This also results in low trust self-participant educate for ask and answer teacher questions related with Theory learning. Problem next is low motivation participant educate in follow CPLE learning, p this could see from attitude no mean it in processing task. state This also results in low understanding to teaching materials and participants educate feel learning not enough mean. as a result, participant educate not enough interested in follow CPLE learning.

Interest study participant educate in CPLE learning is comparable with teacher creativity in teach. CPLE learning with using learning media will impact on participants educate, more relevant media then the taller interest participant educate in CPLE learning in Schools. Use of media in

learning will make it easier for teachers to convey Theory learning. For students, the use of media must be very helpful in understand Theory learning, especially in competence hard base understood.

Learning media used is PBSAS which is still very simple, and the instructions are no clear, so participant educate experience confusion when working on the PBSAS. So from that need developed PBSAS based on problem , because PBSAS can used by participants educate at level varying abilities, PBSAS can also increase involvement participant educate in learning (Rahmadatillah, 2020) . PBSAS also trains collaboration, improve ability solving problems, and spur participant educate think critically. Participant educate could be more active in complete problem and with participant PBSAS assistance educate can also find new ideas from a problem as well as answer it with method they alone. Creativity and ability come up with new ideas is one owned character candidate entrepreneur (Majkova & Kljucnikov, 2017) . Participant learn more creative , proactive and ready standby more possible for start the business (Ni & Ye, 2018) .

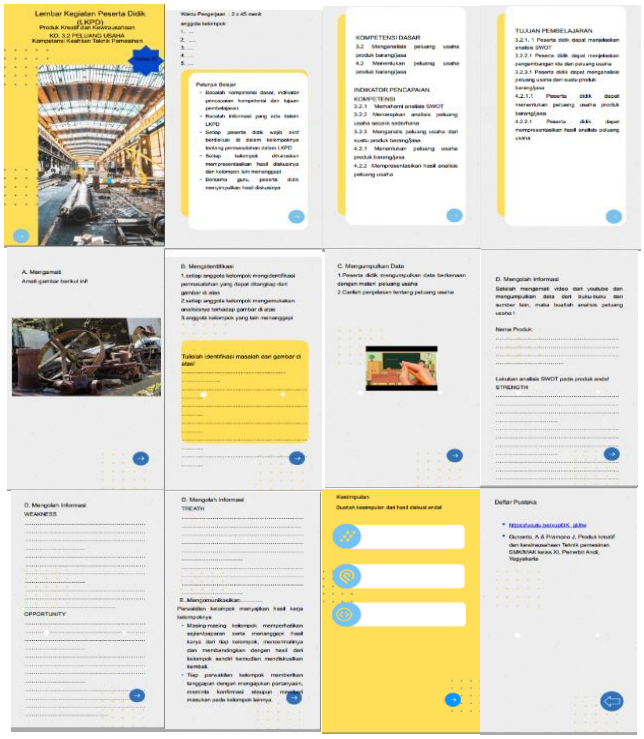

Fig 2. PBSAS results development

2. Development of based PBSAS problems in learning CPLE in VET School

CPLE learning yet capable make participant educates motivated, engaged, and active in learning.

In fact, motivation, involvement, and activeness participant educate comparable with mastery Theory CPLE learning. Mastery Theory good study will impact on attitude creative and innovative participant educate. Attitude creative and innovative this is must character owned a candidate entrepreneur. because of Therefore, it takes learning media that can grow creativity and ability come up with new ideas that. Relevant and interesting learning media required for increase motivation, engagement, and activeness participant educate in CPLE learning. So, from that conducted PBSAS development that has been there is become PBSAS based problem.

PBSAS based developed problem served in google slide form, participants educate could working on the PBSAS with method edit it on the slide shared by the teacher. Developed PBSAS this loads Theory in animated video format. Following this result of feasibility test by expert material, expert learning, and media experts.

CPLE learning will effective if participant educate have interests, motivations, and desires for involved. Interest study participant educate comparable with teacher creativity in teach. Quality teacher professional look with ability manage class and teaching by effective where the teacher can teach participant educate for dominate Theory learning in accordance with demands curriculum.

3. Implementation the use of PBSAS in CPLE learning

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4. Development of based PBSAS problems in learning CPLE in VET School

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PBSAS based developed problem served in google slide form, participants educate could working on the PBSAS with method edit it on the slide shared by the teacher. Developed PBSAS this loads Theory in animated video format. Following this result of feasibility test by expert material, expert learning, and media experts.

5. Evaluation feasibility and effectiveness of PBSAS on developed in CPLE learning

Learning media used is PBSAS could use by participants educate at level varying abilities, PBSAS can also increase involvement participant educate in learning. PBSAS also trains collaboration, improve ability solving problems, and spur participant educate think creative. Participant educate could be more active in complete problems and find new ideas from a problem as well as answer it with method they alone. Creativity and ability come up with new ideas is one owned character candidate entrepreneur. Participants learn more creative, proactive, and ready standby more possible for start his business. PBSAS compiled with Fulfill indicator appropriateness as a learning medium, then determined its effectiveness.

a) Normality test

Normality test to be used is normality test *Shapiro wilk* (sample smaller of 50). Normality test is condition for *test paired sample t test* that will used next. Paired sample t test is used for knowing is there is difference in mean of two paired samples. Two the sample in question is same sample however have two data. In Thing this two data (pre-test and post-test) of class experiment. The paired sample t test is part from statistics parametric, therefore that, as rule in statistics research data parametric must normally distributed.

Normality test use with the *Shapiro wilk* test on the class pre-test and post-test data experiment, generate significant data like seen in table 5. Significance value of 0.000 means smaller than 0.05 then could said the data distributed not normal.

If the data is distributed is not normal then the paired sample t test is not could done, as instead Wilcoxon test was performed.

b) Wilcoxon test

Wilcoxon test aim for knowing there is whether difference in mean of two mutual samples in pairs. *Wilcoxon* test is part from non- parametric statistics, then in Wilcoxon test no normal distribution of research data is required. *Wilcoxon* test used as alternative from the *paired sample t test*, if the research data not normally distributed. Wilcoxon test SPSS output for class experiment and class control shown in Table 2.

Table 2. Normality test *Shapiro wilk* for pretest and posttest value data

Experiment Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Pre	0.329 _	27	0 ,000	0.716 _	27	0 ,000
Post	0.354 _	27	0 ,000	0.643 _	27	0 ,000

The basis for making the Wilcoxon test decision is if the value of Asymp Sig < 0.05, then the hypothesis is accepted , while if the value of Asymp Sig > 0.05, then the hypothesis h is rejected. Based on the SPSS analysis output , it is known that Asymp Sig. (2-tailed) is worth 0.00 0 . Because the value of 0.00 0 is smaller than < 0.05 0 , it can be concluded that "The hypothesis is accepted". This means that there is a difference between the CPLE learning outcomes for the Pre Test and Post Test, so it can also be concluded that the " developed PBSAS " effective ".

Table 4 Test N Gain Score

	N	Min.	Max.	Mean	Std. Deviation
N gain score	27	0.000	1,000	0.749	0.382
pre	27	45	91	81.560	12,380
post	27	64	100	95,000	8,403
Valid N (listwise)	27				

Based on results the calculation of the N-gain score test, shows that the mean (mean) *N-gain score* is of 0.749 including in high category or high. This thing means the use of PBSAS on the eye CPLE lessons are very effective. Next conducted counting big effectiveness treatment the use of

PBSAS on the eye CPLE lessons with use formula Cohen's produce value of d = 1.270, this could conclude that treatment the use of PBSAS on the eye CPLE lessons has great effect to enhancement results study participant learn on the material opportunity effort.

Discussion

Research results this supported by research previously stated that PBSAS learning based problem could increase ability solving problem (Arestu, Karyadi, & Ansori, 2018) . Proposed problem in learning-based problem must base life real and need skills solve problem. Though problem shown in learning that complicated, but use of appropriate strategies could use for getting benefit maximum from approach this. In short, PBL is a right approach for help fulfill needs 21st century (Suwastini, Puspawati, Adnyani, Dantes, & Rusnalasari, 2021) . Learning based problem attempted help participant educate for Becomes learner who manages self alone. Guided by an ongoing teacher continuously encourage and reward they ask and seek solution alone for problem real , student study for showing duty this by independent in life they next (Arends, 2013) . Learning based problem give opportunity to destination learn broader, focused on setup participant educate for becomes inhabitant active and responsible learning answer. Participant educate add experience in face problem realistic, and emphasizes the use of communication, cooperation, resources for formulate ideas and develop skills think.

PBSAS based eye problems lesson product creative, and entrepreneurship could increase motivation, engagement, and activeness participant educate. Research results pointing right existence very high response to the use of PBSAS with utilization *google slides*. This thing in line with past research , that the use of digital PBSAS shows high response and motivation study student increase (Widati, 2021) . Through the application of multimedia -based PBSAS is able to increase liveliness participant educate (Muthoharoh et al., 2017) . Application of developed PBSAS with based problem could increase understanding concepts and activities study participant educate (Fitriani, Hasan, & Musri, 2016) . PBSAS can increase involvement participant educate in learning and the use of PBSAS have influence positive to involvement participant educate inside learning (Rahmadatillah, 2020) , this showed with increased activity study in learning and participants educate involved active for discuss , answer questions in the PBSAS.

Delivery the material in the PBSAS contains suitable material, in thing this is theory opportunity effort. Theory made in animated video shape simple with sufficient duration. The use of this PBSAS is very relevant so that could increase interest study participant educate, match with study Sulistyowati (2017) who proves that the use of relevant and interesting learning media in CPLE learning at School will increase interest participant educate to CPLE learning . Participant educate

could be more active in complete a problem and with participant PBSAS assistance educate can also find new ideas from a problem as well as answer it with method they alone. Assisted learning with PBSAS and learning based problem more could spur student in think creative (Muthoharoh et al., 2017) .

Motivation, involvement, and liveliness participant educate inside learning product creative, and entrepreneurship will add knowledge self-entrepreneurship participant educate. Knowledge entrepreneurship next will grow creativity and generate new ideas, which is one of the owned character candidate entrepreneurs (Majkova & Kljucnikov, 2017). Participants learn more creative, proactive, and ready standby more possible for start alone business (Hu, Wang, Zhang, & Bin, 2018).

Knowledge entrepreneurship by simultaneously have influence to success effort (Ependi & Winarso, 2019) . There is influence significant learning entrepreneurship to taking decision participant educate in entrepreneurship (Sham & Sudarmi, 2019) . Characteristics , knowledge and motivation entrepreneurship take effect positive and significant to interest entrepreneurship participant educate (Faisal, 2020) .

Dennis Coon in book *Introduction to Psychology: Exploration and Application* define character as something evaluation subjective to personality someone related with attribute personality that can or no could accepted by society. Character is habit new positive appear when somebody study for overcome and fix its weakness. Character is answer absolute for create life more society good (Ashori et al., 2017) . Mulyani (2011) in (Simanjuntak et al., 2021) explain a number of values character entrepreneurship, including honesty, discipline, work hard, creative, innovative, independent, responsibility, cooperation, leadership, abstinence give up, dare bear risk, commitment, realistic, desire know, communicative, motivation for successful, and action oriented.

From the description above seen that the PBSAS is based on problems involving participants educate by active, so they find alone method solving problem faced. Participants educate not accept theory lessons solely from the teacher but attempted to dig and develop alone. Thereby expecting participants educate and more motivated to learn and know meaningfulness from what they learned. Learning outcomes are obtained not just in the form of enhanced knowledge, but also improve skills think in solving problems. This thing will give birth to an attitude creative and innovation which is part small of the character entrepreneur. This is in accordance with the research of Hofman (2021) which states that the professional and support of VET trainers affect student competence.

CONCLUSIONS AND SUGGESTIONS

1. PBSAS implementation of CPLE lessons at VET School is not yet in accordance with the hope, because students still experience confusion on PBSAS instructions that have not been clear.
2. PBSAS was developed served in google slide form, students could work on the PBSAS to edit it on the slide shared by the teacher and containing material in the form of animated videos.
3. PBSAS on CPLE lessons at VET School has high effectiveness, demonstrated with the value of N Gain score is 0.749 and strong.

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