The Effect of Self-Efficacy, Motivation and Learning Simulation Competence of Polytechnic of Science Shipping Taruna Semarang

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Info articles

Abstract

Competence cadets can affect the level of output, which is generated in the process of education and learning. The factors that affect the competencies include self-efficacy, motivation, learning simulations. To determine how much influence the research is conducted. The aim of researchers to test and analyze the effects of self-efficacy, motivation and learning simulations for the competence of cadets at the Polytechnic of Semarang Sailing Sciences. This study uses a quantitative approach descriptive correlational design using a questionnaire as data collectors. The study population as much as 172 cadets with a sample of 120 cadets. The results showed: (1) self-efficacy negative direct effect on learning simulations with significant values of 0840 (> 0050) and the beta value (-0056). (2) motivation negative direct effect on learning simulations with significant values of 0057 (> 0050) and the beta value (0530). (3) self-efficacy positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0719). (4) motivation positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0281). (5) simulation learning negative direct effect on the competence with significant values of 0331 (> 0050) and the beta value (-019). From these data indicate that self-efficacy and motivation to improve the competence of cadets. (3) self-efficacy positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0719). (4) motivation positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0281). (5) simulation learning negative direct effect on the competence with significant values of 0331 (> 0050) and the beta value (-019). From these data indicate that self-efficacy and motivation to improve the competence of cadets. (3) self-efficacy positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0719). (4) motivation positive direct effect on the competence with significant values of 0000 (<0.050) and the beta value (0281). (5) simulation learning negative direct effect on the competence with significant values of 0331 (> 0050) and the beta value (-019). From these data indicate that self-efficacy and motivation to improve the competence of cadets. (5) simulation learning negative direct effect on the competence with significant values of 0331 (> 0050) and the beta value (-019). From these data indicate that self-efficacy and motivation to improve the competence of cadets. (5) simulation learning negative direct effect on the competence with significant values of 0331 (> 0050) and the beta value (-019). From these data indicate that self-efficacy and motivation to improve the competence of cadets.

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INTRODUCTION

Education is very important because everyone needs education, education to educating the nation and improve the human resources that can support their survival. Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process. Learning intended that learners are actively developing the potential for him to have the spiritual strength of religious self-control, personality, intelligence noble character and skills needed him, the community, the nation and the State (Act No.20 of 2003). With the expected level of cadets not only apply their knowledge, but must be able to develop the potential that education can be further increased.

The learning method in education is necessary to achieve educational goals. The method according to JR David in Teaching Strategies for College Class Room (1976) is "á way in Achieving something". There are several methods that can be used to implement its strategy for learning, including: 1) lectures, 2) demonstration, 3) discussion, 4) simulation, 5) laboratory, 6) field experience, 7) brainstorming, 8) debate, 9) symposium. In addition to the methods and learning processes are also needed self-efficacy and motivation to achieve competence.

Polytechnic Studies Sailing Semarang is the School of Higher Education of State under the auspices of the Agency for Human Resources Development (BPSDM) Ministry of Transportation, which is the task of educating and training youth - young high school graduates IPA / IPS and vocational majors machine / cruise into officer major shipping and experts kepelabuhan in order to meet the needs of the marine transport fleet marine transportation sub-sector with a diploma IV.

Studies Polytechnic Semarang Cruise is not the only lessons in the classroom, but the lessons simulator as practical lessons. Factors that become barriers that limited the simulator compared with the number of cadets and training participants so that the necessary arrangements schedule for their use, teachers as well as employees rarely get into the classroom and simulator due to the dense bustle owned and sometimes just go a few times in one semester. Besides the lessons that should be waged on many theorized simulator class. From there the self-efficacy and motivation level is reduced so that the competence of cadets to decrease.

The way of assessment of students / learners by Usman in Mudlofir (2016) is the cognitive aspect related to the intellectual abilities of learners that when referring to a taxonomic bloom, can be classified into six levels, namely knowledge or recall (ability to recall), comprehension (the ability to understand it) application (applicability), analysis (ability to analyze) synthesis (the ability to combine), and evaluation (ability to evaluate). Affective aspects related to the attitude of learners, such as attitudes toward learning, self-confidence, responsibility and the like. While psychomotor aspects related to the motoric skills of learners, both motoric subtle, such as the ability to speak, write, draw, cut and rough motoric, such as sporting ability, the ability to use tools,

Fakhruddin argued and Usman (2016) any learning model can only be considered effective or ineffective depending on the results of the evaluation.

Suggests Angkowo.R and Kosasih (2007) process and the learning outcomes are influenced by five external factors include: (1) talent learning, including the interest of the learner (2) the allocation of time available for study based learning competency standards, (3) the ability individual or intelligence on the subject of learning, (4) quality of teaching is conditional, and (5) adequate environment for the continuity of the learning process this study aimed to analyze: 1) the effect of self efficacy towards learning simulation, 2) pengaruhkan motivation to pembelajara simulation, 3) the effect of simulated learning to competence of cadets, 4) influence efficacy against increased competence, 5) the effect of motivation on improvement of competence.

The benefits of the research: 1) develop knowledge of self-efficacy, motivation, learning

simulation and competency of cadets, 2) an input for further research related to self-efficacy, motivation, and learning simulations to develop their competencies in this study, 3) develop insight and a repertoire of knowledge related to human resource management education, particularly in higher education.

METHOD

This study uses a quantitative approach descriptive correlational method using a questionnaire as a data collection tool. The study design puts self-efficacy, motivation as independent variables (independent variables), and competence as the dependent variable (the dependent variable), and learning simulation as intermediate variables (intervening). The study design in the following figure:
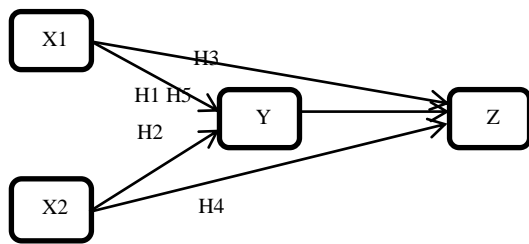

Figure 1. The design used in the study
Information :

X1: Self Efficacy

X2: Motivation

Y: Learning Simulation

Z: Competence

The population in this study is a cadet-midshipmen polytechnic seamanship Semarang totaling 172 people. Samples taken by the Proportional Stratified Random Sampling technique which is calculated using the formula Slovin with an error rate (errors) 5%.

Where :

n = number of samples

N = Number of population

e2 = limit used precision

$n = N / (1 + N (e) 2) = 172 / (1 + 172. (0.05) 2)$
$= 120$

Thus obtained 120 cadets in the sample. The instruments used in the study was a questionnaire with Likert scale that has been through the test phase to test the validation and reliability testing.

Feasibility Test Instruments
Validity test

Validity test used to measure whether a legitimate or valid questionnaires. A questionnaire considered valid if the questions in the questionnaire can reveal something that will be measured by the questionnaire. (Ghozali, 2006).

To test the validity of this research using Confirmatory Factor Analysis (Confirmatory Factor Analysis or CFA) was used to test whether a construct has the dimensionality uni or whether the indicators used can be confirmed as a construct or variable. To measure the level of intercorrelation between variables and whether or not to do the factor analysis is the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO MSA) with KMO values> 0.50 and 0.05 level sampling adequacy and Loading factor (expected value> 0, 4) for validity.

Test Realiblitas

Is a tool to measure the reliability of a questionnaire which is an indicator of variables or constructs. A questionnaire is said to be reliable or reliable if the answer to the statement sseorang is consistent or stable over time (Ghozali, 2006). In this study using reliability by analyzing questionnaires with Cronbach Alpha statistical test. A construct or a variable is said to be reliable if the value of Cronbach Alpha> 0.70.

Test Requirements

Normality test

Normality test is intended to determine whether in the regression model, or residual confounding variables have a normal distribution. A good regression model is to have a normal distribution of data or close to normal. If the test is normal, then the statistical calculation results can be generalized to the population. In the test requirements have research data if one sample Kolmogorov_Smirnov method, with the decision-making criteria is if a significance for each variable melebhi error level of 5%, the data is said to be normally distributed.

Test R2 (coefficient of determination)

The coefficient of determination (Adjusted R Square), is used to determine the percentage of which is able to be explained by variable efficacy and motivation toward learning simulations. If the Adjusted R Square obtained from the calculation indicates the greater (closer to one) Makda can be said that the contribution of the independent variables on the dependent variable so that the greater the greater the model used to explain the dependent variable. Conversely, if the Adjusted R Square shows the smaller, then used the smaller models, the models used to explain the weaker bound variable. In general, said that the magnitude of the coefficient of determination (Adjusted R Square) is between 0 and 1 or $0 \leq$ Adjusted R Square ≤ 1.

Test F

F-test was used to test the effect of independent variables on the dependent variable overall. If sig. <0.05 then the test is acceptable, if sig> 0.05, then the test was rejected.

Table 1. Test results of statistical Non - Parametric

Kolmogorov- Smirnov (KS)

	unstandardized residual
N	120
Normal Parameters Mean	0.0000000
	0.42633274
Std. deviation	0092
Most Extreme Differences	0065
Absolute	-0.92
	1,008
positive	0261
negative	
Kolmogorov-Smirnov Z	
Asymp.Sig. (2-tailed)	

From Table 1 it is known that the Sig. amounted to 0.261 so that it can be stated that the normal distribution of data because the value is> 0.05.

Goodness of fit test model 1

F test is used to determine the fit or not to the model used, is said to be fit if sig $\leq$ 0:05. Results of testing the significance of simultaneous or also called the F test statistic can be seen as the following table.

Table 2. Test Statistic F / Anova

Model	Sum of Squares	Df	mean Square	F	Sig.
Regression	6358	2	3,179	17,196	.000 b
residual	21 629	117	.185		
Total	27 988	119			

Goodness of fit test Model 2

F test is used to determine the fit or not to the model used, is said to be fit if sig. $\leq$ 0:05. Results of testing the significance of simultaneous or also known as the F statistical tests can be seen in the following table.

Table 3. Test Statistic F / Anova

Model	Sum of Squares	Df	mean Square	F	Sig.
Regression	18514	3	6.171	1076.404	.000 b
residual	.665	116	.006		
Total	19179	119			

Table 5. Self Efficacy Test Validity Indicator

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0656
variables	result (Loading Factor)	Information
X1.1	0882	valid
X1.3	0484	valid
X1.4	0859	valid
x1.5	0729	valid
X1.6	0495	valid

In table 3 the test results F decent statistical analysis, found the Sig. 0,000 which means <0.05.

Test R2 (coefficient of determination)

The coefficient of determination (adjusted R Square) is used to see the ability of independent variables in explaining the dependent variable and the proportion of the variation of the dependent variable explained by the variation of the independent variables. If R2 obtained from the calculation of the smaller (near zero), it can be said that the smaller models used to explain the dependent variable. In general, said that the magnitude of the coefficient of determination (adjusted R Square) is between 0-1 or $0 \leq$ Adjusted R Square ≤ 1. The results in the table below.

Table 4. Model Summary Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.983a	.965	.964	.07572

RESULTS AND DISCUSSION

Test the validity of indicator variables Self Efficacy done by analyzing KMO - MSA with the result, as in the table below.

Self efficacy variable sample test showed the value of KMO-MSA amounted to 0,656> 0.5. Thus, the sample met and factor analysis can proceed. In the first stage variable test performed with include all the indicators, there is one indicator that has a loading factor <0.4 ie indicator number 2.

Validity Indicator Variables Motivation, conducted by analyzing KMO-MSA with the result, as in the table below.

Table 6. Validity Indicator Variables Motivation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0660
variables	result (Loading factor)	Information
X2.1	0886	valid
X2.2	0738	valid
X2.3	0533	valid
X2.4	0870	valid
X2.5	0411	valid
X2.6	0479	valid

Test samples on motivation variable shows the value of KMO-MSA amounted to 0.660> 0.5. Thus, the sample met.

Table 7. Validity Indicator Simulation Learning

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0770
variables	result (Loading Factor)	Information
Y.1	0549	valid
Y.2	0570	valid
Y.3	0419	valid
Y.4	0444	valid
Y.5	0629	valid
Y.6	0699	valid
Y.7	0781	valid
Y.8	0678	valid

Test samples for the variables Learning Simulations show KMO-MSA value of 0.770> 0.5. Thus the sample met and factor analysis can proceed. In the phase I trial conducted by the variables include all indicators, there are two indicators that have loading factor <0.4 are number 9 and number 10 is eliminated.

d.Uji validity indicator variable Competency, conducted by analyzing KMO-MSA and Loading factor with the results in the table below.

Table 8. Variable Competency Test Validity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0625
variables	Results (Loading Factor)	Information
Z1	0508	valid
Z3	0531	valid
Z4	0856	valid
Z5	0681	valid
Z6	0873	valid

Competence variable sample test showed the value of KMO-MSA amounted to 0.625> 0.5. Thus the adequacy of the sample fulfilled and factor analysis continued. In the phase I trial conducted to include all the indicators, there is one indicator that has a loading factor <0.4 are indicators of the number 2.

Test Reliability

Research using reliability by analyzing questionnaires with Cronbach Alpha statistical test. A construct or variable if the value of Cronbach Alpha> 0.70.

Table 9. The reliability statistics Research Variables

variables	Cronbach's Alpha (α)	reliability
Self efficacy	0.728	Reliable
Motivation	0.726	Reliable
learning Simulations	0.742	Reliable
Competence	0.727	Reliable

Reliability testing self-efficacy variable yield Cronbach's Alpha value of 0.728 the value is greater than 0.7 so that it can be said that the research reliable. Testing for generating motivation variables Cronbach's alpha value of 0.726 so that it can be stated that the whole point indicators have the reliability and consistency of research because it has a coefficient or alpha> 0.7.

Reliability testing on simulated learning variables generate value Cronbach 's alpha of 0.742 or more than 0.7 so that all indicators otherwise reliable. Reliability testing conducted on competence variables that have been declared invalid on the previous validity test. This test get Cronbach's alpha value of 0.727 which means seeluruh instrument otherwise reliable because it has a coefficient of more than 0.7. Only valid indicators are used to test reliability.

Hypothesis testing

T test basically shows how far the influence of the independent variables individually in explaining the variation of the dependent variable. Testing through t test is done by comparing t arithmetic with t table at alpha (α) = 5% (0.05). Testing is as follows:

Table 10. Coefficient Model 1

Model	Coefficients unstandardized		standardized Coefficients	t	Sig.
	B	Std. Error	beta		
Constant	1,239	.480		2,580	.011
Self efficacy	-.067	.333	-.056	-.202	.840
Motivation	.692	.360	.530	1,924	.057

Dependent Variable: Learning Simulation.

Table 11. Coefficient Model 2

Model	Coefficients unstandardized		standardized coefficients	t	Sig.
	B	Std. Error	beta		
Constant	-.054	.087		-.616	.539
Self efficacy	.721	.059	.719	12 278	.000
Motivation	.304	.064	.281	4,726	.000
learning Simulations	-.016	.016	-.019	-.975	.331

Dependent Variable: Competence

Testing through the significance test is performed to determine the significance and direction of the influence of the independent variable on the dependent variable on the submission of 5 (five) hypothesis in the previous chapter. The hypothesis is accepted if the significance ≤ 0:05 and the hypothesis is rejected if the significance of> 0.05.

Effect of Self Efficacy towards Learning Simulation. In the table 10 is known that the Sig. For Self Efficacy variable is equal to 0840 (> 0,050) and the beta value (-0056). This indicates that the Self Efficacy has no effect on the simulation study. Thus the first hypothesis is rejected.

Effect of Motivation on Learning Simulation. In Table 10 known value of Sig. Motivation for the variable is equal to 0057 (> 0050) and the beta value (0530). This shows that motivation does not affect the simulation learning. Thus Hypothesis 2 was rejected.

Effect of Self Efficacy towards competence. In the table 10 is known that the Sig. For Self Efficacy variables is 0.000 (<0.050) and the beta value (0719). It shows that the effect on Competency Self efficacy. Thus Hypothesis 3 accepted

Effect of Motivation on Competence. In the table 11 is known that the Sig. Motivation for the variable is 0.000 (<0.050) and the beta value (0281). It shows that the effect on competence motivation. Thus Hypothesis 4 is accepted.

Effect of Simulated Learning to Competency. In the table 11 is known that the Sig. Simulation for Learning variables for 0331 (> 0,050) and the beta value (-0.19) simulation shows that learning does not affect the competence. Thus hypothesis 5 was rejected.

Self efficacy affects the Learning Simulations

Self efficacy no effect on learning simulations. It dilhat of value*sig*, In table 10 that Self Efficacy towards Learning Simulations 0840 and a beta value of -0. 056, which means more than 0.05 so this hypothesis is rejected. In this hypothesis can be explained that the Self Efficacy has no effect on the simulation study, based on the phenomenon that occurs at PIP Semarang it happens because the cadets do not get bad grades when not follow the practice of stability.

This is in contrast with previous studies conducted by Smeekens, AEFN et al (2011) "Successful e-learning program on the detection of child abuse in emergency departments: a randomized controlled trial" .The stated that self efficacy positive effect on learning simulation.

Motivation affects the Learning Simulations

Motivation does not affect the simulation learning. It is seen from the sig. In table 10 that motivation towards learning Simulation 0057 and 0530 a beta value of more than 0.05, which means that the hypothesis is rejected. In this hypothesis can be explained that the motivation has no effect on learning simulations. Based on the phenomenon that occurs at PIP Semarang, it was due to timing of simulator exercises cadets along with the use of simulator training participants schedules.

This is in contrast with previous studies conducted by Trajkovik, V et al (2018) "Traditional games in elementary school: Relationships of student's personality traits, motivation and experience with learning outcomes" .The stated that the positive effect on learning motivation simulation.

Self Efficacy effect on Competence

Self Efficacy positive effect on Competence. It can be seen from the sig. In table 11 that sig. 0000, which means less than 0.05 and a beta value of 0719 so that this hypothesis is accepted. Based on the phenomenon exists at PIP Semarang, cadets who have high self-efficacy have a good competence. So that the phenomenon exists, it can be seen cadets are choosing stability as a very hard lesson, able to grasp and understand the lessons better stability of the ship with time in the simulator, so that cadets can make loading unloading cargo stowage plan on board.

This is in line with the opinions Scholtz B et al (2012) "A comprehensive, competency-based education framework using medium sized ERP (Enterprise Resource Planning) systems". Stating that self efficacy positively affects competence.

But contrary to the opinion Wossenie Girma (2014) "Teacher's Emotional Intelligence and Sence of Self-Efficacy Belief: A Study on Second Cycle Public Primary School EFL (English as Foreign Language) Teacher in Bahir Dar Town, Ethopia)". Stating that self efficacy negatively affect competence.

Motivation effect on Competence

Self-motivation positive effect on Competence. It can be seen from the *sig.* In table 11 that sig. 0000, which means less than 0.05 and a beta value of 0281 so that this hypothesis is accepted. Based on the phenomenon exists at PIP Semarang that cadets who have high motivation to learn will have a good competence. Midshipman able to take a test the stability of the ship properly and correctly in accordance with the instructions and directives given.

This is in line with the opinion of the IO Oyefolahan, Dominic PDD (2012) "Knowledge management systems use and competency development among knowledge workers". Menyatakkan that positively affects motivation competence. But contrary to the opinion of John Wong CK et al (2008) "Sport Ability Belief, 2x2 Achievement Goals, and Intrinsic Motivation: The Moderating Role of Perceived Competence in Sport and Exercise". Stating that negatively affect the competence motivation.

Learning Simulation effect on Competence

learning simulation negatively affect the competencies, it can be seen from the sig. In Table 11 that the Learning Competency Simulation to 0331 and a beta value -0019, which means more than 0.05, so the hypothesis is rejected. In this hypothesis can be explained that learning simulation does not affect the competence. Based on the phenomenon that occurs at PIP Semarang it happens because of cadets who often slept in class when the lesson can be taught the stability of great value during final exams.

This is contrary to the opinion of JD and Messenger JC Carroll (2008) "The new tool for training and skills assessment". Stating that simulation learning positive effect on competence.

CONCLUSION

Based on data obtained from the research that has been done in PIP Semarang, the results of the analysis outlined in chapter IV, the researchers concluded as follows: (1) Self Efficacy has an influence on learning variables Simulation. This means that the cadets were not sure would get poor grades. (2) Motivation has an influence on learning simulation simulator stability means that the learning time cadets together or clash with other training implementation schedule, so that it can affect the motivation of cadets. (3) Self Efficacy has an influence on competence means that cadets who have high self-efficacy influence the good competence which the cadets chose stability as a difficult subject, and they were able to follow the practice of the current stability of the ship in ship simulator properly. (4) Motivation has an influence on competence, that is highly motivating cadets will get a good competence, that is able to make a stowage plan cadets in training vessel stability in the ship simulator. (5) Learning simulation has an influence on competence. It means learning schedule cadets simulator in conjunction with other simulator training participants schedule, so it can affect the competence of cadets due to no usage time. (5) Learning simulation has an influence on competence. It means learning schedule cadets simulator in conjunction with other simulator training participants schedule, so it can affect the competence of cadets due to no usage time. (5) Learning simulation has an influence on competence. It means learning schedule cadets simulator in conjunction with other simulator training participants schedule, so it can affect the competence of cadets due to no usage time.

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