

E-training based on Determination of Education and Training Models of Early Childhood Teachers Education Programs

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Abstract

The success of education and training is determined from all components themselves. E-training as a medium of education and training is one of the aspects of achieving the goals of education and training effectively and efficiently. The purpose of this study is to analyze the e-training based on Determination of Education and Training Models of Early Childhood Teachers Education Programs. This research approach is a quantitative approach using Structural Equation Modeling (SEM). This research was carried out at the Center for Early Childhood Education and Society Education Education in Central Java. The respondents of this study were Early Childhood teachers who attended e-training based education and training which number were 183 respondents in total by using non-probability sampling techniques. Data collection technique used was questionnaire. Data analysis technique was using SEM AMOS software. The results of the study show that individual differences, job analysis and principles of learning indirectly have a positive and insignificant effect on the effectiveness of education and training through the use of e-training. Motivation, active participation, trainer competence, indirect training methods indirectly have a positive and significant effect on the effectiveness of training through the use of e-training. E-training has a positive and significant effect on the effectiveness of training.

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INTRODUCTION

The globalization era which is shown towards digital technology requires the availability of competent human resources in order to compensate. The development of digital technology may result the formation of human resources that are primitive and isolated if be avoided. The fulfillment of competent human resources to follow development of digital technology can be done through education, so it needs a good attention from a country. The sophistication of the technology utilized by the actors of education must be supported by quality of human resources who are capable in carrying out the work.

According to article 1 section 9 of the Constitution No 13 of 2013 about employment, training is the whole activities to provide, obtain, increase and develop work competence, productivity, discipline, attitude and work ethic on the level of skills and specific skills in accordance with the level and qualifications of the position and the job (Kemenaker, 2013). Meanwhile, according to Kamarainen (2002: 23) education and training are the enhancement activities of human resources in meeting the needs of future skills and requests of new qualifications. It is also said by Neo (2010: 5) that Education and training are ways to create intellectual ability that includes basic skills, advanced skills, and self-motivated creativity. Based on the understanding of education and training above, it is concluded that education and training are activities of providing the stimulation to do a better job in accordance with the company objectives to improve the skills of employees or workers and as a bridge to the development of knowledge and experience.

According to Widiasih and Suminar (2015) stated that the object of training is to achieve a change in the behavior of thoses trained. The purpose of Education and training is to achieve a change in the behavior of those who are trained. Education and training not only improve knowledge and skills, but also develop talents.

Ratnasari (2013: 43) stated that the factors of training that consist of training materials the ability of trainers, training methods, and training participants partially have significant influence to the performance of the employees. So, the existence of education and training in an institution or agency will have an impact on the achievement that has been set and lead to the achievement of both the institution and personally.

Individual differences are significant determinant of interaction, learning and adaptation (Ojo, Raman, & Chong, 2016: 45-63) According to Tai (2006: 51-65) found that participants have more training motivation when they were assigned to attend training programs by the management than they make their own choices freely.

The Council of The European Union asserted that some changes show that training in the institutional and business context changes, producing new competency requirements for trainers both in terms of basic qualifications and ongoing professional development.

Meanwhile, according to Mamaqi, Miguel, & Olave (2011: 174-187) confirmed that teachers and trainers deal with the basic skills and competence such as curriculum development, tutorial support, skills assessment, management of learning environment, and teacher professional development that is sustainable.

According to Amara (2016: 83) E-training is defined as the process of distance training through the use of the Internet or an Intranet, providing the necessary knowledge to some particular subjects or specialization which is selected, to increase the level of knowledge or to achieve rehabilitation by using computer, voice, video, multimedia, e-book, e-mail, chat and discussion group. Meanwhile, according to Ramayah, Ahmad, & Hong (2012: 125-137) stated that e-training resembles e-learning in many ways especially in terms of delivery methods and technology used, except that it refers to the framework of a shorter learning time which is specifically designed to achieve the learning objectives or specific skills.

Based on the understanding above, it can be concluded that e-training is the utilization of electronic media for education and training activities in order to improve skills and performance of the participants of education and training.

According to Prasetyo and Gintoro (2010: 118) explained that as an alternative to the traditional training which has been running in advance, the web-based online training model that is cheap gives more open options for the customer to choose the type of training services that suit the needs and abilities of the customer. As an alternative to the traditional training which has been running before, the web-based online training model provides convenience for customers who have limited time and is difficult to reach the location of training to be able to get service training. Whereas, according to Ramayah, Ahmad, & Hong (2012: 125-137) stated that e-training resembles e-learning in many ways especially in terms of delivery methods and technology used, except that it refers to the framework of a shorter learning time which is specifically designed to achieve the learning goals or specific skills.

According to Hasibuan (2010: 29) stated that effectiveness of training is the final result of the training conducted for the company or institution in the form of increasing the knowledge, skills and ability of the participants, so they can work better.

Development center of early childhood education and education of Central Java society are the Technical Implementation Unit of the Ministry of Education and Culture which have a task to implement the development model and the quality of education. All components in achieving the educational success and training should be sustainable, having positive effect significantly. However, in fact, there are still problems that become obstacles in the implementation of e-training-based education and training. The impact of these problems is the achievement of the purpose of the implementation of education and training has not been effective and efficient. This is what underlies the researcher

to conduct research about e-training-based determination of education model and training of early childhood teacher's education programs.

METHODS

This study used a quantitative approach with survey methods. Quantitative approach is done by obtaining empirical data that allows researchers to see the general tendency behind the behavior of a person or group through analyzing the data in the form of numbers. Research with data in the form of numbers or is changed into numbers, so the approach used is a quantitative approach (Sugiyono, 2013: 7).

The population in this study were *PAUD* teachers who joined e-training-based education and training with a total of 2584 teacher. The sampling technique used in this study is non-probability sampling with a purposive sampling technique. What is meant by non-probability sampling is a sampling technique that does not provide equal opportunities/chances for each element or member of the population to be selected as a sample (Sugiyono, 2013: 86). While purposive sampling is a technique of determining samples with certain considerations (Sugiyono, 2013: 85). Determination of the number of samples by using Isaac and Michel formulae make it easy to determine the number of samples with an error rate of 1%, 5%, and 10% according to the desired. So, in this study, the numbers of samples based on the formula above were 183 respondents with an error rate of 5%. By the estimation method using Maximum Likelihood (MC), 100 samples were needed in minimum and 200 samples were needed in maximum (Ghozali, 2007)

In this study, there were variables that will be measured, namely: independent variables (exogenous), intervening variables and dependent variables (endogenous). There are seven independent (exogenous) variables, they are individual differences, job analysis, motivation, active participation, trainer competence, education and training methods, and learning principles. There was one

intervening variable, it was the use of e-training and there was one dependent variable (endogenous), namely the effectiveness of education and training.

Data collection techniques used in this research were observation and questionnaires. The scale measurement instrument used in this study was Likert Scale with five alternative answers Likert Scale which was used to measure attitudes, opinions and perceptions of a person or group of people about social phenomena.

Data analysis techniques used in this study was Structural Equation Modeling (SEM). SEM testing in this study was using AMOS 24.0 statistical software. The first step was to examine the measurement model and structural model on exogenous and

endogenous variables using confirmatory factor analysis (CFA) analysis to test whether the indicators used were valid and reliable indicators as a measure of latent variables by looking at the factor loading value ≥ 0.5 . While to measure the consistency of the measuring instrument, it was done by calculating the construct reliability of ≥ 0.6 . For structural models, SEM analysis was done by assessing the matching of the goodness of fit estimation in the research model and hypothesis.

RESULTS AND DISCUSSIONS

Validity and Realibility Test

Based on the results of analysis, it is obtained the results of validity test from the the following table.

Table 1. Summary of Validity and Reliability Test using Loading Factor, Construct Reliability, Variance Extracted

Variables	Indicators	Standar Loading	Construct Reliability	Notes
Individual Differences	pi1	0.664	0.81080755	Reliable
	pi2	0.659		
	pi3	0.668		
	pi4	0.744		
	pi5	0.66		
Job Analysis	aj4	0.7	0.754482798	Reliable
	aj3	0.61		
	aj2	0.782		
	aj1	0.533		
Motivation	m4	0.582	0.759669933	Reliable
	m3	0.745		
	m2	0.756		
	m1	0.564		
Active Participation	pa4	0.638	0.709246717	Reliable
	pa3	0.725		
	pa2	0.587		
	pa1	0.504		
Trainer Competences	kp4	0.703	0.710518549	Reliable
	kp3	0.619		
	kp2	0.578		
	kp1	0.563		
Training Methods	md4	0.538	0.745271957	Reliable
	md3	0.697		
	md2	0.784		

	md1	0.568		
Learning Principals	pb5	0.629		
	pb4	0.669		
	pb3	0.599	0.788313857	Reliable
	pb2	0.646		
	pb1	0.721		
E-Training	e8	0.665		
	e7	0.599		
	e6	0.595		
	e5	0.699	0.837432566	Reliable
	e4	0.558		
	e3	0.704		
	e2	0.593		
	e1	0.587		
Learning Effectivity	ed1	0.662		
	ed2	0.549		
	ed3	0.614	0.757232586	Reliable
	ed4	0.554		
	ed5	0.502		
	ed6	0.623		

Based on the table above, it is known that it is directly obtained through standardized loading factor for error measurement from each indicator is ≥ 0.5 . So, it can be concluded that the entire variable can be explained from every its indicator or valid.

The table above also explains that the value of construct reliability is above ≥ 0.60 , which means that instruments are reliable, however, the variance extracted value shows the construct= fulfilling the cut-off requirement

of a minimum value of 0.50, which means that the indicators used as observed relative variables are able to explain the latent variables that are formed. The Variance Extracted value is ≥ 0.05 , it indicates a good convergence (Ghozali, 2007: 135).

Confirmatory Factor Analysis

The test results of confirmatory factor analysis of exogenous variabe show goodness of fit which is presented in the table below.

Table 2. The Results of Feasibility Test of Exogenous Variable Confirmatory Analysis Model

Goodness of Fit Index	Cut-off Value	Results	Model Evaluation
X^2 Chi- Square Statistics	df, $\alpha \leq 430,69$	386,49	Good
Probability	$\geq 0,05$	0,455	Good
CMIN/DF	$\leq 2,00$	1,006	Good
GFI	$\geq 0,90$	0,881	Marginal
AGFI	$\geq 0,90$	0,855	Marginal
TLI	$\geq 0,90$	0,998	Good
CFI	$\geq 0,90$	0,998	Good
RMSEA	$\leq 0,08$	0,006	Good

Based on the test results presented in the table above, it can be seen that the construct used in the confirmatory analysis research

model has met the criteria of goodness of fit that has been set. The probability value on goodness of fit shows a value of 0.634. This

value has met the feasibility of testing and it is categorized as good although there are some marginal testing values. Referring to the opinion of Solimun (2002) stated that based on the parsimony principle, if there is one or two

fit criteria the model has met, the model is considered fit.

Whereas, the results of confirmatory factor analysis of endogenous variables show the goodness of fit which is presented in the table below.

Table 3. The Results of Feasibility Test of Endogenous Variable Confirmatory Analysis Model

<i>Goodness of Fit Index</i>	<i>Cut-off Value</i>	Results	Model Evaluation
X^2 Chi- Square Statistics	df, $\alpha \leq 97,35$	96,814	Good
Probability	$\geq 0,05$	0,054	Good
CMIN/DF	$\leq 2,00$	1,274	Good
GFI	$\geq 0,90$	0,927	Good
AGFI	$\geq 0,90$	0,900	Good
TLI	$\geq 0,90$	0,956	Good
CFI	$\geq 0,90$	0,963	Good
RMSEA	$\leq 0,08$	0,039	Good

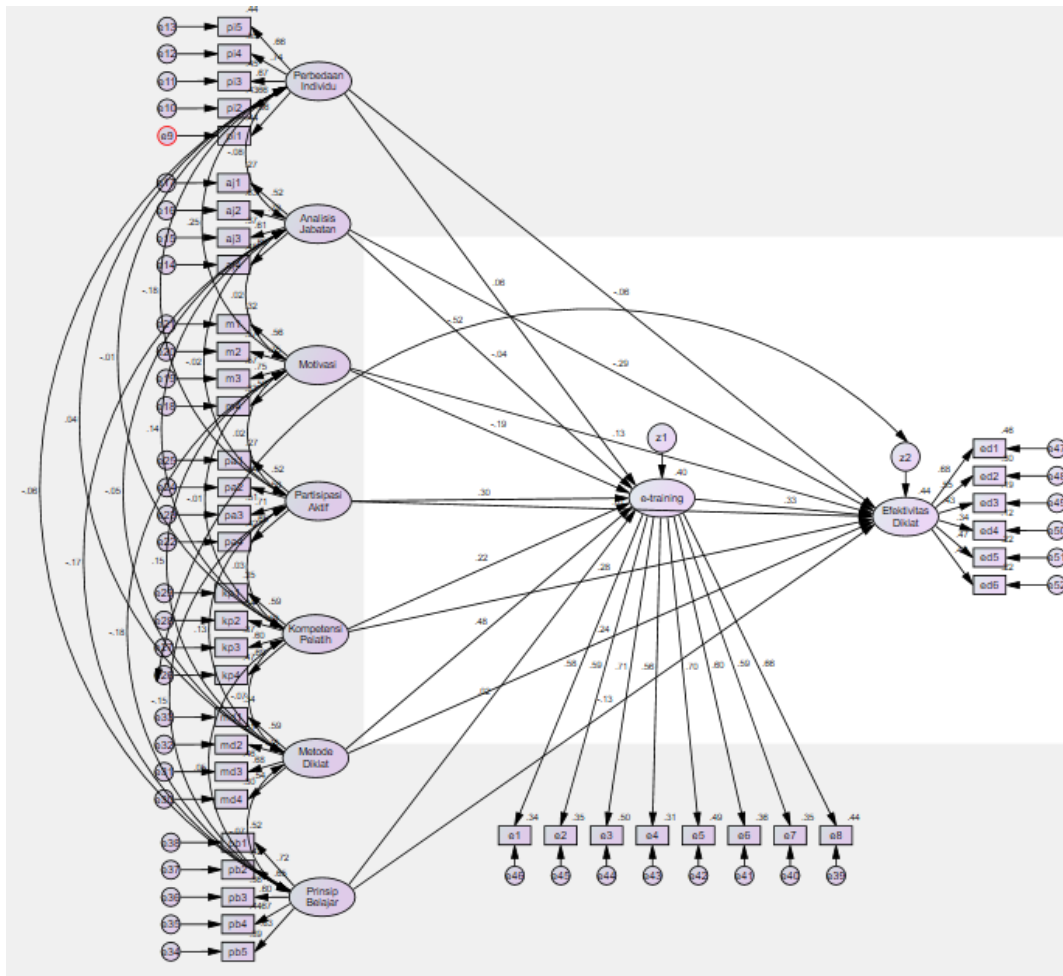
Based on the test results presented in the table above, it can be seen that the construct used in the confirmatory analysis research model has met the criteria of goodness of fit that has been set. According to the probability value table on goodness of fit, it shows a value of 0.054. This value is categorized as marginal, so it can be concluded that the model is accepted and feasible to use.

The requirements that must be fulfilled in SEM modeling are normal multivariate assumptions, the absence of multicollinearity or singularity and no outliers occur in the study. Ghazali (2011: 64) stated that the Maximum Likelihood (ML) estimation technique is more efficient and unbiased if the assumption of multivariate normality is fulfilled, that is by the amount of Critical Ratio (CR) > 2.58) multivariately normal data must be normal univariate. However, on the other hand, if the entire data that is normally univariate, it is not a guarantee that it will be multivariately normal outside the range of ± 2.58 . The results of testing with the value of 2,125 shows that the research data used had meet the prerequisite of normality of the data or in other words that the data in this study has

been normally distributed. In addition, the value of the determinant of the sample covariance matrix was 1.6441. This value was far from zero, so it can be concluded that there is no problem of multicollinearity and singularity in the data analyzed, the value of the mahalanobis distance is smaller than 72,20 based on the value of Chi Square at degrees of freedom of the number of indicators $n=43$ at a significance level of 0.001 (Ghozali, 2005: 130). It can be concluded that there were no multivariate outliers in research data.

Structural Equation Modelling Analysis (SEM)

The analysis of Structural Question Modeling (SEM) thoroughly or full model is the phase that is done after doing an analysis of confirmatory factor analysis on the variables exogenous and endogenous. Analysis of the results of data processing of the whole or full SEM model was conducted to test the suitability of the goodness of fit and statistical tests. The following is a presentation of the results of overall analysis or full SEM model in the form of images.



Picture 1. The Results of Structural Equation Modelling (SEM)

The results of the SEM feasibility test or goodness of fit are shown in the following table.

Table 4. The Results of Analysis Model of Structural Equation Modelling (SEM)

<i>Goodness of Fit Index</i>	<i>Cut-off Value</i>	Results	Model Evaluation
X ² Chi- Square Statistik	df, $\alpha \leq 948,04$	926,30	Good
Probability	$\geq 0,05$	0,073	Good
CMIN/DF	$\leq 2,00$	1,071	Good
GFI	$\geq 0,90$	0,822	Marginal
AGFI	$\geq 0,90$	0,796	Marginal
TLI	$\geq 0,90$	0,964	Good
CFI	$\geq 0,90$	0,967	Good
RMSEA	$\leq 0,08$	0,020	Good

Based on the table above, it can be stated that the model used can be accepted. At the level of significance of 0.073, it shows taht a structural equation model is on the unfavorable category. Likewise, the test results of Chi-Square, CMIN / DF, CFI, TLI, and RMSEA

are in the category of value as expected. However, for the index values of GFI and AGFI are in the bad category. So, it can be concluded that the feasibility test of the SEM model has met the admission requirements.

The next step is hypothesis testing, this step was done after the SEM testing was done to meet the hypothesis that has been proposed in this study. The test of all hypotheses is done

by looking at the Critical Ratio (C.R) value of cashuality relationship from the results of SEM processing as presented in the following table.

Table 5. Hypothesis Testing of Each Variable

			Estimate	S.E.	C.R.	P	Label
e_training	<---	individual_differences	.064	.096	.668	.504	par_1
e_training	<---	job_analysis	-.047	.088	-.527	.598	par_2
e_training	<---	motivation	.242	.117	2.075	.038	par_3
e_training	<---	active_participation	.362	.117	3.091	.002	par_4
e_training	<---	trainer_competences	.243	.104	2.338	.019	par_5
e_training	<---	training_methods	.592	.138	4.278	***	par_6
e_training	<---	learning_principals	.020	.101	.194	.846	par_7
training_effectivity	<---	individual_differences	-.067	.100	-.667	.505	par_8
training_effectivity	<---	e_training	.310	.125	2.477	.013	par_9
training_effectivity	<---	learning_principals	-.140	.107	-1.315	.188	par_10
training_effectivity	<---	training_methods	.279	.145	1.933	.053	par_11
training_effectivity	<---	trainer_competences	.295	.131	2.251	.024	par_12
training_effectivity	<---	active_participation	.009	.123	.072	.943	par_13
training_effectivity	<---	motivation	.152	.123	1.235	.217	par_14
training_effectivity	<---	job_analysis	.285	.102	2.789	.005	par_15

Education and Training Model for PAUD Teachers

The estimation parameter in testing the influence of individual differences on the effectiveness of the training shows a C.R value of -0.667 with a probability of > 0.05. So, it can be concluded that the variable of individual differences have no impact on the effectiveness of education and training. The results are consistent with the research of Robins and Pals (2002) which stated that individuals oriented to work objectives and making mistakes in training with helpless attributes negatively affecting training.

The estimation parameter in testing the effect of job analysis on training effectiveness shows a C.R value of 2.789 with a probability of <0.05. So, it can be concluded that job analysis variables have positive and significant effect on the effectiveness of education and training. The results are consistent with the research of Veen and Versloot (1993) which stated that training must be based on job

profiles and even extends to the personal economic sector since it affects on the training.

The estimation parameter in testing the effect of motivation on the effectiveness of training shows a C.R value of 1.235 with a probability of > 0.05. So, it can be concluded that motivation variables have positive and insignificant effect on the effectiveness of training. The results are consistent with the research of Tassone, Dik, & van Lingen (2017) which explained that motivation in individual training does not have an additional effect on knowledge and beyond the influence explained by education knowledge and pre-training, although the motivation of training and knowledge of post-training declarations correlates significantly.

The estimation parameter in testing the effect of active participation on the effectiveness of training shows a C.R value of 0.072 with a probability of > 0.05. So, it can be concluded that active participation variables have positive and insignificant effect on the

effectiveness of education and training. The results are consistent with the research of Solansky and McIver (2017) which explained that we still have no a complete understanding of how the team actually increases or inhibits the learning outcomes, such as participation in training programs. Due to the tendency to use teams as part of education and development programs continues to increase, the need to fully understand the effectiveness of this strategy is very important.

The estimation parameter in testing the influence of trainers competence on the effectiveness of training shows a C.R value of 2.251 with a probability of <0.05 . So, it can be concluded that the competence of trainers variable have a positive and significant effect on the effectiveness of training. The results are consistent with the research of Mamaqi, Miguel, and Olave (2011) which stated that the competence and new skills of trainers on identifying positive have an impact on training success.

The estimation parameter in testing the effect of the training method on the effectiveness of training shows that the C.R value is 1.933 with a probability of <0.05 . So, it can be concluded that the training method variables have a positive and significant effect on the effectiveness of training. The results are consistent with training methods research of Mor, Glezer, and Zviran (2011) which explained that his study provides new knowledge on how an organization can effectively utilize training resources to achieve better operational training excellence.

The estimation parameter in testing the effect of learning principles on the effectiveness of training shows that a C.R value is -1.315 with a probability of > 0.05 . So, it can be concluded that the principle study variables have a negative effect and insignificant on the effectiveness of education and training. The results are consistent with the research of Edward (2007) which stated that it is not surprising that a training to provide effective answers. Participants easily give up to study because they are no longer oriented to a task and obligation that must be fulfilled with too

much methods that are not appropriate to the background of participants.

E-training-based Model of Education and Training of early childhood teacher's education programs

The estimation parameter in testing the effect of individual differences on the use of e-training shows a C.R value of 0.688 with a probability value of 0.504, then the probability value is > 0.05 . So, it can be concluded that the variables of individual differences indirectly have a positive and insignificant effect on the effectiveness of education and training through the use of e-training. The result are consistent with the research of Robins and Pals (2002) individuals oriented to work goals and making mistakes in training with helpless attributes negatively affecting training.

The estimation parameter in testing the effect of job analysis on the use of e-training shows a C.R value of -0.598 with a probability value of 0.504, so that a probability value is > 0.05 . So, it can be concluded that job analysis variables indirectly have a negative and insignificant effect on the effectiveness of education and training through the use of e-training. The results are consistent with the study of Klink (2002) which stated that job analysis does not fully affect training even though training is needed according to the field of work.

The estimation parameter in testing the effect of motivation on the use of e-training shows a C.R value of 2.075 with a probability value of 0.038, so that the probability value is <0.05 . So, it can be concluded that the motivation variables indirectly have a positive and significant effect on the effectiveness of education and training through the use of e-training. The results are consistent with the research of Renta (2014) which stated that a significant influence between motivation to increase work, motivation to learn, coherence training on the effectiveness of training.

The estimation parameter in testing the effect of active participation on the use of e-training shows a C.R value of 3.091 with a probability value of 0.002, so that the probability value is <0.05 . So, it can be

concluded that the variable of active participation indirectly has a positive and significant effect on the effectiveness of education and training through the use of e-training. The results are consistent with Weaver's research (2017) the participation of trainees with higher education levels tends to have a positive effect on training.

The estimation parameter in testing the influence of the trainers competence on the use of e-training shows a C.R value of 2.338 with a probability value of 0.019, so that the probability value is <0.05 . So, it can be concluded that the variable of trainer competence indirectly has a positive and significant effect on the effectiveness of training through the use of e-training. The results are consistent with the research of Mamaqi, Miguel, and Olave (2011) which stated that the competence and new skills of trainers have an impact on identifying positive impacts on training success.

The estimation parameter in testing the effect of the training method on the use of e-training shows a C.R value of 4.278 with a probability value of 0.001, so that the probability value is <0.05 . So, that it can be concluded that the variable training method indirectly has a positive and significant effect on the effectiveness of education and training through the use of e-training. The results are consistent with the research of Kaptan-Mor, Glezer, and Zviran (2011) which explained that his study provides new insights on how an organization can effectively utilize training resources to achieve better operational training excellence.

The estimation parameter in testing the influence of the principle of learning on the use of e-training shows a C.R value of 0.194 with a probability value of 0.846, so that the probability value is >0.05 . So, it can be concluded that the principle of learning indirectly has a positive and insignificant effect on the effectiveness of education and training through the use of e-training. The results are consistent with the research of Edwards (2007) which stated that it is not surprising that a training to provide effective answers.

Participants easily give up to learn because they are no longer oriented to tasks and obligations that must be fulfilled with too much methods that are not appropriate to the background of participants.

The estimation parameter in testing the effect of e-training on the effectiveness of training shows that a C.R value is 2.477 with a probability of <0.05 . So, it can be concluded that e-training variables have a positive and significant effect on the effectiveness of training. The results are consistent with the research of Ramayah, Ahmad., And Hong, (2012) while the organization is aware of the benefits that e-training brings, namely cost effectiveness, flexibility, convenience, consistency of content throughout the organization, many who do not recognize the critical factors that influence the successful implementation.

E-training-based Determination of Education and Training Model of early childhood education Teachers

Job analysis, trainer competence, and training methods have a direct and positive effect on the effectiveness of early childhood education teachers training with the magnitude of the effect in sequence is 28.9%, 27.5%, and 23.7%. Active motivation and participation directly and positively and insignificantly influence the effectiveness of early childhood education teachers training with the magnitude of the effect in a sequence are 12.7% and 0.8%. Individual differences and earning principles indirectly have no effect on the effectiveness of education and training of early childhood education teachers.

Training methods, active participation, trainer competence, and motivation indirectly have a positive and significant effect on the effectiveness of training through the use of e-training. The magnitude of the influence is 15.6%, 9.9%, 7%, and 6.3%. Individual differences and the principle of learning indirectly have a positive and insignificant effect on the effectiveness of education and training through the use of e-training with the magnitude is 1.9% and 0.6%. Job analysis

indirectly does not affect the effectiveness of education and training through the use of e-training. The e-training variable directly has a positive and significant effect on the effectiveness of the training. with a magnitude of influence is 32.6%

CONCLUSION

The conclusion in this study is that job analysis, trainer competence, and training methods directly have a positive and significant effect on the effectiveness of early childhood education teachers training. Active motivation and participation have a directly positive influence and insignificant on the effectiveness of ECD educator training. Individual differences and learning principles directly have no effect on the effectiveness of education and training of early childhood educators.

Training methods, active participation, trainer competence, and motivation indirectly

The magnitude of the total effect of the training method, trainer competence, job analysis, motivation, active participation, individual differences and learning principles in sequence are 39.3%, 34.5%, 27.4%, 19%, 10.7%, -4.5% and -12.2%.

have a positive and significant effect on the effectiveness of training through the use of e-training. Individual differences and the principle of learning indirectly have a positive and insignificant effect on the effectiveness of training through the use of e-training. Job analysis indirectly does not affect the effectiveness of training through the use of e-training. The e-training variable directly has a positive and significant effect on the effectiveness of the training.

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