

Role of Self-efficacy in Dual Expertise Vocational Teacher Achievement

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The purpose of this article is to discover the factors that may affect the achievement of dual expertise teachers related to self-efficacy. Sequential mixed method design approach is used to uncover the relevant self-efficacy factors that affect the achievement of dual expertise vocational teachers, with the qualitative findings enriched by the quantitative findings. The study was conducted with the Dual Expertise Program (DEP) participant teachers spread around the East Java province, Indonesia. Based on the results of the study we found that: (1) self-efficacy can act as a driver of improved performance in dual expertise teachers; and (2) there is a significant difference in self-efficacy among DEP participant teachers who graduated the National Written Exam and passed through the remedial exam and does those that do not pass the exam.

Key words: *Self-efficacy, Dual Expertise Program, teachers achievement.*

Introduction

Indonesia experienced a shortage of vocational teachers (Amron, Syamwil, & Sudana, 2018; Sasmito, Kustono, Purnomo, & Elmunsyah, 2019). It encouraged the Indonesian Government to issue a Presidential Instruction, Number 9 of 2016, on Vocational High School Revitalisation, with one implication of this policy the convening of the Dual Expertise Program (DEP) (Sohidin, 2018; Wibowo & Munadi, 2019; Wijaya et al., 2018). DEP is an innovation of vocational teacher training which aims to address the shortage of vocational teachers by giving them authority to teach a vocational subject for non-vocational teachers (Kemendikbud, 2016; Sasmito, Kustono, Purnomo, & Elmunsyah, 2020). DEP participant teachers will be trained for a certain amount of time and their expertise will then be tested, both on vocational skills and on teaching competencies (Rochmawati, Timan, & Kusumaningrum, 2019; Wahyudi, Purnomo, & Yoto, 2019). As a result of the DEP training

the now dual expertise teacher is expected to be able to become the vocational educator to their students and able to work according to their area of expertise, as is the nature of vocational education (Sasmito, 2017).

Unfortunately, the facts on the ground show that there are some teachers who had difficulties when they undertook DEP (Sasmito et al., 2020). The majority of teacher training difficulties are in absorbing the course material, which is done both face to face or by independent learning through online methods (Amron et al., 2018). As a result, many teachers find it hard to finish the DEP, as shown by many DEP participant teachers who did not pass the skills test phase, known as the National Written Exams (NWE) (Kemendikbud, 2019). Teacher participants who have not completed DEP and have not passed the NWE cannot be called a dual expertise teacher (Kemendikbud, 2016).

It is known that many DEP participant teachers are over the age of 40 years (PPPPTK-BOE, 2017). The applied learning method during DEP are adult learning methods like andragogy (Rochmawati et al., 2019; Sasmito et al., 2019), so it requires independence in learning (Chametzky, 2018; Chen, 2017). It shows the mindset of the DEP participant teachers who are able to finish DEP, with this mindset success is one of the indicators of teacher's self-efficacy (Cansiz & Cansiz, 2019; Chhajer, Rose, & Joseph, 2018), which is thought to be a trigger of success for the dual expertise teacher. This is supported by several previous studies, which states that self-efficacy has a positive effect on one's accomplishments (Barredo, 2019; Emmons & Zager, 2018; Mahasneh & Alwan, 2018; Nasir & Iqbal, 2019; Nerona, 2017).

From the above explanation it is known that there is a presumption factor that contributes to the achievement of DEP participant teachers. This factors is self-efficacy, the belief of the teachers to succeed in completing tasks and activities (Dibapile, 2012; Kurt, Güngör, & Ekici, 2014; Mahler, Großschedl, & Harms, 2018). From this research it shows that self-efficacy is teachers trust to be able to succeed in carrying out and completing DEP.

Along with this, the problem statement can be described as follows:

1. How is the role of self-efficacy in dual expertise teacher training achievement?
2. Are there significant differences in self-efficacy among DEP participant teachers who achieve different results?

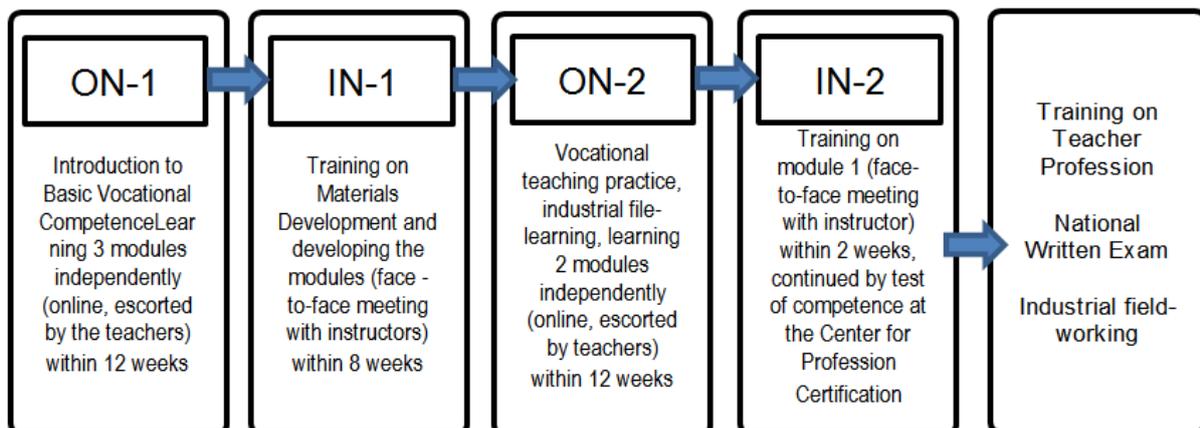
This article aims to identify the factors that may affect the achievement of dual expertise teachers in relation to self-efficacy. Thus, this research is focused on describing the factors that can act as a spur for dual expertise teacher achievement in terms of the influence of self-efficacy.

Literature Review

Dual Expertise Program

The Dual Expertise Program (DEP) is one form of teacher training in Indonesia as part of the Vocational Education Revitalisation established through the Indonesian Presidential Instruction No. 9 of 2016 on Vocational High School Revitalisation (Kemendikbud, 2016). DEP is useful as teacher training in adding new skills to the non-vocational teacher's skillset, so that the non-vocational teacher can teach in vocational subjects after they graduate with vocational expertise competency certification and teaching competencies (Amron et al., 2018). The flow of DEP is shown in Figure 1.

Figure 1. Flow of DEP



DEP is a combination of: (1) on service training (ON-1 and ON-2) which is held online, accompanied by a supervisor-teacher; and (2) in service training (IN-1 and IN-2) held face-to-face, accompanied by instructors in a learning center (Sasmito et al., 2019). At the end of DEP, participant teachers will carry out a vocational expertise competency test by the Professional Certification Agency and sit a teaching competencies test such as the National Written Exam (NWE) at the end of Training including Professional Teacher Training, which, if passed, marks the graduation of dual expertise teachers (Sasmito et al., 2019).

Self-efficacy

The term of self-efficacy is synonymous with Bandura's opinion and is related to the trust someone has to succeed in carrying out what they are doing (Bandura, 2012; Kassis, Graf, Keller, Ding, & Rohlfs, 2019). Self-efficacy would involve one's perception of their personal competence to act in a certain way according to their ability (Glatz & Trifan, 2019; Nordin & Mohamed, 2013). Self-efficacy can be a level of motivation that affects one's persistence and

it is developed through the gradual acquisition of knowledge of their tasks (Didonato, Johnson, & Reisslein, 2014; Macinati, Cantaluppi, & Rizzo, 2017). Based on the above explanation, if it is associated with the research described in this article, self-efficacy is teacher's trust to be able to succeed in carrying out and completing DEP.

There are several indicators of self-efficacy, including magnitude, strength and generality (Bandura, 2012; Cansoy, Polatcan, & Parlar, 2018; Dalanon & Matsuka, 2017; Sahara & S, 2017). Magnitude, including the ability and the confidence level of a person in overcoming problems related to the completion of the task (Musharraf, Bauman, Anis-Ul-Haque, & Malik, 2018). Strength is a person's belief on his or her ability to complete a specific task related to his/her activities (Cansoy et al., 2018; Dalanon & Matsuka, 2017). Generality is a belief in one's ability to handle events and circumstances that vary (Cansoy et al., 2018; Sahara & S, 2017).

Previous Research about Teachers' Self-efficacy

Some studies related teacher's self-efficacy are as follows. Research (Güngör & Özdemir, 2017), related to teacher's self-efficacy who participated in a pedagogical certification program in Turkey. The experiment was conducted with teachers participating in training programs with a focus on their self-efficacy. The results showed that teacher's self-efficacy will vary depending on age and gender. Those teachers who have more advanced capabilities in completing the task of certification will have a higher self-efficacy.

Research by (Taştan et al., 2018) is related to the effects of motivation and self-efficacy of teachers on student achievement. The research was conducted in two countries, Iran and Russia. The results showed the influence of teacher's self-efficacy on their performance with student achievement. In reflecting on its results in relation to the learning process, student motivation and interest can increase by bringing attention to the self-efficacy of teachers.

Research by (Gonzalez & Maxwell, 2018) related teachers self-efficacy and their impact on student achievement when considering the experience and certification of the teacher. The findings stated that teacher's self-efficacy is essential in increasing their performance. In addition, the mastery of concepts as a result of achieving certification and gaining teaching experience will improve the performance of teachers in teaching the learning material.

Research by (Gulistan, Athar Hussain, & Mushtaq, 2017) shows teacher's self-efficacy in relation to their student's academic achievement as a reflection of the teacher's performance. The experiment was conducted with 576 respondents in six districts in the Indian state. The results showed the strong influence teacher's self-efficacy has on teacher performance as

indicated by student achievement, therefore during the expected service training focus is needed on their efforts to increase the confidence and self-efficacy.

Research by (Mambwe, Chishimba, & Manchishi, 2019) related to the prospective teachers preparation and teacher's self-efficacy in teaching methods. The results showed that low self-efficacy will encourage teachers to have low self-esteem. It will be an obstacle in the implementation of learning methods in learning activities in the classroom. As a result, students would benefit less from the learning process.

Method

Mixed method research approach is used to unravel the role of self-efficacy on dual expertise teachers achievement. The design is sequential exploratory mixed method design, with qualitative findings enriched by quantitative findings (Creswell, 2012; Morell & Carroll, 2010). Descriptive qualitative methods will be implemented prior to the case study approach in several vocational schools in East Java with DEP participant teachers as key informants and supervisor-teachers and DEP instructors as the main informant, whereas quantitative methods will be implemented as a reinforcement of the qualitative findings. Quantitative methods which are used are the analysis of variance related to differences in the level of teacher's self-efficacy measured by the difference of the graduation achievement of DEP participant teachers. The number of samples is determined using Malhotra techniques (Malhotra, Nunan, & Birks, 2017), with the number of samples at least equal to five to ten times the number of questionnaire items from the dual expertise teacher population in East Java expertise. The number of questionnaire items are 8, making the minimum sample size at least 80 DEP participant teachers. Quantitative assessment will focus on the investigation of the level of self-efficacy and dual expertise teachers achievement, especially in terms of graduating the National Written Exam (NWE).

The research instrument used in this study is an interview guideline and questionnaire. Interview questions related to self-efficacy are related to the implementation of the DEP. Aspects of self-efficacy in question include (1) the magnitude, including the ability to overcome the problems associated with the level of difficulty of DEP task and the task that is deemed able to be implemented; (2) strength, includes belief in the ability to achieve success in every DEP task and the strong hope about ability to self-push to achieve the DEP goals and succeed; and (3) generality, includes that the level of belief in the ability depends on an understanding of the person's capabilities and to be able to understand that their capabilities are limited to the activities and specific situations that vary (Cansoy et al., 2018; Dalanon & Matsuka, 2017; Sahara & S, 2017).

Instrument protocols, such as interview protocol and questionnaire framework, were developed from several theories and previous research. It was consulted by three experts in education, education evaluation, and grammar. The resulting validation in the form of suggestions for improvement from the experts will be implemented to the instrumental material to be used as guidelines for a good interview of the research informants. Interview protocol is shown in Table 1.

Table 1: Interview Protocol

Dimensional Research Focus	Item Questions
Magnitude	Does the DEP participant teacher able to overcome the difficulties associated with the training process on DEP?
	Does the DEP participant teacher tend to shy away from the task or materials that are beyond the limits?
Strength	Does the DEP participant teacher confident in carrying out the DEP?
	Does the DEP participant teacher confident of his/her ability to succeed in completing DEP?
Generality	Does the DEP participant teacher confident with his/her self-ability without depending on anyone else?
	Does the DEP participant teacher able to improve yourself in the new expertise which is taught through DEP?

Checking the validity of the data is carried out through triangulation of data sources, namely by determining the validity of data from different informants exposure (Creswell, 2012). In this article, the triangulation of data sources is used, which is the result that DEP participant teachers will be crosschecked with the findings from 8 DEP instructors.

In this study, a closed questionnaire is used according to the Likert scale with five intervals. The scoring system is based on the selection of respondents and are in the five alternative answers, covering totally inappropriate, not suitable, less suitable, appropriate, and very appropriate (Joshi, Kale, Chandel, & Pal, 2015; Yusoff & Mohd Janor, 2014). Questionnaire framework is shown in Table 2.

Table 2: Questionnaire Framework

Dimensional Research Focus	Item Questionnaire
Magnitude	DEP participant teacher can independently solve the encountered problems when carrying out tasks both in on-service training and in-service training.
	DEP participant teacher proactively complete the task during DEP without asking for referrals instructor or supervisor-teacher.
	DEP participant teacher tend not to force his/herself if DEP task is beyond his/her limits.
Strength	DEP participant teachers had low confidence in following DEP.
	DEP participant teachers are not confident of their ability to succeed in DEP.
Generality	DEP participant teachers tend to be dependent on another participant teacher
	DEP participant teachers ability to understand tends to be limited to the initial expertise.
	DEP participant teachers find it hard to improve themselves in their new expertise taught through DEP.

Data analysis of the self-efficacy questionnaire will be directed to the analysis of variance in levels of self-efficacy in terms of DEP participant teachers achievement. The review of DEP participant teachers achievement is conducted through documentation of NWE graduation documents which are obtained from the Teacher Professional Education and Training organizers. The results of the NWE graduation include: (1) the main pass; (2) pass through the remedial test; and (3) have not yet or do not pass. The analysis used is One-Way ANOVA with the hypothesis

$$H_0 : \mu_{\text{graduation1}} = \mu_{\text{graduation2}} = \mu_{\text{graduation3}}$$

There is no significant difference between the self-efficacy of DEP participant teachers who passed the NWE and pass through remedial test and have not or do not pass the NWE.

$$H_a : \mu_{\text{graduation1}} \neq \mu_{\text{graduation2}} \neq \mu_{\text{graduation3}}$$

There is a significant difference between the self-efficacy of DEP participant teachers who passed the NWE and pass through remedial test and have not or do not pass the NWE.

Hypothesis testing is performed using IBM SPSS Statistics 25 software. The rule of One-Way ANOVA testing is: (1) if $\text{sig} \leq \alpha$ (0.05), then the decision is rejecting H_0 ; and (2) if the $\text{sig} > \alpha$ (0.05), then the decision is accepting H_0 (Gamst, Meyers, & Guarino, 2008),

Results

Qualitative Findings: Magnitude

The qualitative research is conducted with 12 DEP participant teachers in East Java, and spreads over several schools in several cities. The result is crosschecked with 8 DEP instructors. From the results of interviews with Ms.RCK as participant teacher from SMKN 1 Jiwon Madiun it is known that:

Researcher : Were you able to overcome the difficulties associated with the training process on DEP?

Informant (RCK) : Yes, there must be any troubles, because we think this is something new.

Researcher : Do you tend to shy away from the task or materials that are beyond your limits?

Informant (RCK) : No, because when we keep our mindset, we believe we can. We do it first, if we're having trouble then we asked for help from our instructors.

Researcher : So, I see you are, in implementing DEP independence, supported by a sense of excitement in yourself?

Informant (RCK) : Yeah, I m also supported by the instructors. They are very kind.

From the results of the interviews with Mr.AS as participant teacher of SMKN 5 Surabaya it is known that:

Researcher : Are you able to overcome the difficulties associated with the training process on DEP?

Informant (USA) : Difficulty huh? I think because it is necessary to undertake some adaptation, there is little difficulty. But after a while, no problem, because of the instructors and participants, the school, all of them supporting us.

Researcher : So the difficulty can be overcome?

Informant (USA) : It could, though with extra learning. In the end I could complete this DEP well.

Based on interviews it is known that the DEP participant teachers will be able to overcome the difficulties associated with the implementation of the DEP. The majority of the other participating teachers also said the same thing, namely the difficulties faced by the participant teachers will be addressed by the guidance of instructors in addition to a sense of passion for them to succeed. That can encourage participant teachers to complete DEP well. This is in line with the results of interviews to Mr.HI as an instructor of SMKN 5 Surabaya, they recognised that:

Researcher : Are the teacher participants able to overcome the difficulties associated with the training process in DEP?

Informant (HI) : Difficulties can be dealt with, because at the learning center we taught face to face, with me and other instructors. As long as they can do their work independently, and so on. But if there's trouble, they can ask us. Their spirit was nice—the spirit to complete DEP successfully.

The same thing is conveyed by Mr.ZFH as an instructor of SMKN 1 Jiwan Madiun:

Researcher : Are the teacher participants able to overcome the difficulties associated with the training process on DEP?

Informant (ZFH) : They can handle it. Most of the difficulties experienced by the teacher participants result from skill background that is not alligned. As a result they have to study harder. Indeed there is a high spirit, but there is also a lower one than their friends. But the teachers who are passionate tend to have a better task completion.

Qualitative Findings: Strength

The investigations related to strength aspects of the participant teachers are known from interviews to Ms.K as participant teacher from SMKN 1 Banyuwangi:

Researcher : Are you confident in carrying out the DEP?

Informant (K) : Yes, I am confident. I already have a provision in the areas of Multimedia, so I'm more confident to carry out DEP.

Researcher : So, are you unsure of your ability to succeed in completing DEP?

Informant (K) : Of course, I even had to struggle to pass on the NWE.

Other interviewed participant teachers also said similar things to Ms.K, stating that there is confidence and belief in the self-ability of participants teacher. This is reinforced by the results of interviews with Ms.NDH as an instructor of SMKN 4 Malang which states that:

Researcher : Are teacher participants confident in carrying out the DEP?

Informant (NDH) : Most teachers are really confident. In addition, they also have a passion to succeed, despite their different abilities and skill backgrounds.

Researcher : So are teachers who have confidence and passion to succeed expected to have better results?

Informant (NDH) : I encountered such. Teachers who have a passion to succeed have better results. After graduation, they are more confident to teach, although still need the assistance of the more senior teachers.

Such findings on the participants mentioned that teachers that have more confidence will have better results, in addition to their passion for success in teacher participants.

Qualitative Findings: Generality

Based on interviews with Mr.MAS as participant teacher of SMKN 5 Malang it is known that:

Researcher : Are you confident with your self-ability without depending on anyone else?

Informant (MAS) : Of course, because I was able to finish DEP. Besides, I was already experienced in the field of Multimedia, my educational background also supported my DEP.

Researcher : So, were you able to improve yourself in the new expertise which is taught through DEP?

Informant (MAS) : I was able to learn and understand the DEP material well, the proof is that I passed the test and getting the educator's certificate from NWE as well.

Researcher : Have you previously been a certified educator?

Informant (MAS) : Not yet, but I did not pursue the certificate. Indeed there are some of my friends who pursue a teaching certificate, but I tend to want to improve my knowledge in the field of Multimedia.

Participant teacher confidence in self- ability to complete the DEP will lead to the success of the DEP participant teachers. This is reinforced by the results of interviews with Mrs.KTA as an instructor of SMKN 2 Jember:

Researcher : Are participant teachers confident with their self-ability without depending on anyone else?

Informant (KTA) : Most of them are competent, but most did not. For those who are competent indeed they had confidence in their ability, so they can teach confidently. Another case for those who have difficulty, because of their academic background not being alligned. It can be said that the mapping out of vocational teachers is less than optimal, and so is the DEP registration process.

Quantitative Findings

A Self-efficacy questionnaire was distributed to 165 dual expertise teachers spread around East Java, including dual expertise teachers who've taught in vocational schools in Surabaya, Bondowoso, Jember, Banyuwangi, Malang, Batu, Madiun, Magetan, and Tulungagung. The number of questionnaires returned was 150 (response rate of 90.91%). Hypothesis testing is performed using IBM SPSS Statistics 25 software with the results shown in the ANOVA table below.

ANOVA					
Self-efficacy					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	235.227	2	117.613	5.020	.008
Within Groups	3.444.166	147	23.430		
Total	3.679.393	149			

Based on the ANOVA table is known that sig is less than 0.05, amounting to 0,008. Based on the rules (Gamst et al., 2008) it was decided to reject H0. This shows that there is a significant difference between the self-efficacy of DEP participant teachers who passed the NWE and pass through remedial test and those who have not or do not pass the NWE.

Based on the explanation above, note that the qualitative findings are supported by quantitative findings, by: (1) self-efficacy contributes to the achievement of dual expertise teachers, as evidenced by the respective focus of research (magnitude, strength, generality) contributes positively to the achievement of dual expertise teachers; and (2) there is a difference between teacher's self-efficacy in participants with different outcomes in the NWE graduation, meaning that a person's level of self-efficacy can affect different achievements.

Discussion

The results of research related to the role of self-efficacy in dual expertise teacher achievement is consistent with prior research (Alnawasreh, Norb, & Sulimanc, 2019; Atoum & Al-momani, 2018; Gulistan et al., 2017; Saleem, Ali, & Rashid, 2018; Vorensky, 2018). This article reinforces the findings of research other researchers have carried out, ie self-efficacy may contribute to the improvement of teacher achievement. The findings also mention a few things that can affect self-efficacy of teachers, among others, the educational background in cognitive provision for teachers, as well as the mindset of the teacher. These factors located on the DEP, with educational background as one of the considerations of the admissions tutor for DEP participants, in addition to participating teachers teaching experience. This is consistent with previous research that says that there are various factors

that drive the increase in self-efficacy of teachers, among others mastery of materials, experience, social influence and emotional arousal (Filippou, 2019; Ma & Cavanagh, 2018; Utari, Kartasasmita, & Julika, 2019). It will boost the self-efficacy factors, such as the magnitude, strength and generality, because these three factors will be strengthened if someone has experience and has a good mastery of the vocational material, and is supported by their own mindset (Gutiérrez, 2018; Martins, Costa, & Onofre, 2015; Sinkonis, 2018).

The quantitative findings also mentions differences in teachers' self-efficacy among participants with different NWE graduation. That is, the different levels of self-efficacy will result in different achievements. This supports the findings of the qualitative and supported by previous research (Ma & Cavanagh, 2018; Malkoç & Mutlu, 2018; Wyatt, 2018). The implication of this finding is self-efficacy will encourage dual expertise teachers to succeed in completing DEP, so that it can provide a positive impact on the achievement represented by the NWE graduation stage.

Conclusion

Based on the research that has been done, it can be concluded that the dimensions of self-efficacy, magnitude, strength and generality, can support dual expertise teachers to perform better. This is shown amongst DEP participant teachers by their ability to overcome difficulties, their self-confidence and self-belief with their ability. Self-efficacy can play a role in dual expertise teacher achievements, which is reinforced by the findings of the different levels of self-efficacy in dual expertise teacher showing in different graduation achievements. Therefore, dual expertise teachers need to consider the self-efficacy factors in the implementation of teacher training for DEP.

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