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The effectiveness of iCRT Video-based Reflection System on Pre-service Teachers' Micro Teaching Practice Focusing on Meaningful Learning with ICT

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Abstract. This study tried to analyze the pre-service teacher performance in teaching practice while joining the teacher education program using developed system called i-Critical Reflection on Teaching (iCRT) video-based reflection and using traditional way which is paper-based reflection. The objects of this research are sixty pre-service teachers in Manado State University, Faculty of engineering, department education of information communication and technology who are in the third year of the teacher education program which divided in two groups, video-based (VB) reflection (experiment group) and paper-based (PB) reflection (control group) with 30 participants in each group. Quasi-experiment method was used in this study. Totally, 60 pre-service teacher. The VB-Reflection group was used iCRT reflection system and paper-based reflection used by PB-Reflection group. The result show that, there were significant differences between these two group in terms of how they doing the reflection (Self-Reflection, Peer-Reflection and Meta-Reflection) from round one to round three using meaningful learning with ICT framework. This finding indicated that pre-service teacher in video-based reflection group contribute more reflection than pre-service teacher in paper-based reflection. In addition, the analysis result of pre-service teacher teaching practice performance from self-reflection during round 1, round 2 and round 3, there were extremely positive changes showed in VB-Reflection group as well as those in paper-based reflection group with small changes. It also noticed that peer responses helped to encourage the growing awareness of teacher to change themselves in classroom teaching to be better. Therefore, it strongly recommends that the iCRT system use in teacher education program especially in micro teaching course to enhance the quantity and quality of reflection in order to produce qualified prospective teachers who are ready to face the real situation of teaching.

1. Introduction

The pre-service teacher also known as teacher's candidates are those who are enrolled for teacher preparation program and working towards teacher certification. Students that have been accepted into the teacher education program, but have yet to complete requirements for full certification as a teacher. One of the essential skills in this program is teaching practice. It is an integral part of teacher education programs. It aims to equip prospective teachers with the skills, competence, and experience of teaching in full as well as make teaching practice as an early instrument to assess the professional ability of prospective teachers. To produce professional teachers who can carry out effective learning activities, guidance and supervision by experts and education practitioners for prospective teachers should be done during the teaching practice. This is a quality control effort when there is a gap between theory and practice when a prospective teacher will teach in a classroom where prospective teachers will face reality on the field that they may not meet during their teacher education. (Daramola, 1991) Actual reflection of educational practice must derive from a paradigm of self-

awareness (Dewey 1933). Without that trademark, any examination of instructing is far less strong as an intellectual endeavor and more similar to instructor assessment forms, regularly drained of setting. Therefore, Evaluator who evaluate teacher candidate must demonstrate a high rate of inter-rater reliability and communicate evaluation outcomes in constructive and supportive ways. In addition, an evaluator must assess carefully and in accordance with the specified standards. As evaluators explore how to effectively reflect on teaching practice, it is important to consider the type of reflection by using videotaped to do the assessment. Since the 1960s, the video has been utilized as part of teacher education program (Sherin and Van Es, 2005). This is the best approach to perceive what they are doing (Wang and Hartley, 2003). Sherin and Van Es (2005) talked about the idea of an educator's capacity to "take note". The video is viewed as a device that can help teacher candidate build up the capacity to see what is happening in the classroom. Hence, using a videotaped type of assessment hopes to contribute regarding assessment in teaching practice. In this research, the researcher offers to use meaningful learning with ICT framework as an assessment guide to micro teaching activity, where the framework is very appropriate to be realized in the education department of information and communication technology that require the participants to be able to implement the utilization of ICT as described previously. Referring to an assessment framework that is meaningful learning with ICT, this study uses a developed iCRT namely (i-Critical Reflection on Teaching) video-based Reflection platform online based website. In this platform the pre-service teachers will upload their video teaching practice which will then be evaluated by the evaluators. The use of meaningful learning with ICT framework and video-based reflection platform is certainly not easy. The desire to learn and grow is very important. In addition, teacher candidate must be equipped with sufficient knowledge to be able to implement it in the activity of teaching practice.

2. Related Works/Literature Review

Notwithstanding the development of the utilization of data and correspondence innovations by instructive suppliers around the globe and the capability of advanced advances to reform training in the 21st century, ICTs in the classroom are frequently utilized as an approach to maintain conventional educating and learning. With the expanded accessibility of computerized gadgets, open source, and effectively available online devices, it ends up basic to approach the utilization of new advances in the classroom from an academic, as opposed to a specialized perspective. Enhancing the teaching experience of pre-service teachers through the use of videos in web-based computer-mediated communication (CMC) (2006) by Greg C. Lee and Cheng-Chih W. This paper describes the use of computer-mediated communications (CMC) to provide feedback for pre-service teachers, novice teachers involved in the Teaching Practicum course in teacher education programs. Pre-service teacher's micro teaching performances were videotaped and view in the CMC system. Experienced high school teachers or in-service teachers criticize pre-service teachers' performance and lead discussions using the CMC system. The results of the questionnaires given to all participants showed that the system effectively improved the pre-service teacher's teaching experience. Five reasons that can be done are: easy access to integrated sessions adhesive; learn better from the personal teaching style; more info sharing about someone and more learning from peer prospects; more concrete feedback; and more effective teacher experience. Fostering pre-service teachers' noticing with structured video feedback (2016) Marc Kleinknrcht and Alexander Groschner Journal of Teaching and Teacher Education described that it is important to embed video in a meaningful way for example via structured course work. They found that video based reflection help to encourage peer and expert reflection and to change self-reflection of pre-service teacher. It offers one chance to expand pre-service teachers' self-reflection and particularly to help them to assess circumstances in a more adjusted way and clarify their assessments in a fairly organized, logical, and (self-) critical way. V-share-video-based analysis and reflection of teaching experiences in virtual groups by Peter Huppertz, Ute Massler and Rolf Ploetzner. The project "v-share" formerly develops the methodological concept and technical support for video-based analysis and reflection on teaching experiences in (virtual)

groups. The internet-based tool lets permits pre-service teacher in blended learning courses of action to share videos of their own and their fellow pre-service teachers' teaching lesson and to choose groupings for joint online investigation, comment and reflection.

Meaningful learning is active and constructive, occurring when individuals create information because of their environment, considering movement and articulating what they have learned. It is authentic and intentional, situated in a meaningful context in which students are roused by working towards an objective. It is also cooperative, depending on socially arranged understanding and the common development of information (Jonassen, et al, 2003). This ethos upheld five key components of meaningful learning. Moreover, these five components offer open doors for the advancement and organization of creativity which include intentional, constructive, active, cooperative and authentic (Jonassen, et al.'s, 2003). Fig1 demonstrates the interrelationship between the five attributes of meaningful learning (Howlandn Jonassen, Mara, 2012).

Figure 1. The Character of Meaningful Learning with ICT

Teacher education programs regularly engaged microteaching activities, in which pre-service teachers teach and record brief lessons to peers and receive feedback from both peers and supervisors. Video has become an essential tool for working with both preservice and inservice teachers (Sherin & van Es, 2005). Video-based aims to helping teachers use video to examine teacher thinking, decision-making and reflection. Video has the potential to capture reality in an authentic and relevant way. The main concepts and goals of video-based teacher professional development, as well as the lack of research on affective factors, are described in the next section, focusing on multifaceted processes that are enabled during the development of video-based professionals. It is highly useful so as to determine the strengths and weaknesses of the teacher, and it will not take as much time as self-reports or peer observation/feedback methods of evaluation. The process of self-evaluation teaching requires teachers to reflect on the effectiveness of their instructional delivery for the purpose of informing the areas of teaching skills improvement (Keller, Brady, & Taylor, 2005). Various approaches have been used in teacher education to support teacher self-evaluation. Lee & Wu (2006), classifies progress in educational research methods that have influenced teacher self-evaluation into three categories: (1) the scale of self-assessment and reporting; (2) electronic recordings; and (3) teachers' reflections and teaching portfolios.

3. Overview of iCRT Video-based Reflection System

i-Critical Reflection on Teaching (iCRT) video-based reflection is a website system which designed to be able to assess the teaching practice from pre-service teachers by uploading teaching practice video and then be assessed by the pre-service teacher itself, fellow friends (peers) and mentor. For its use, pre-service teachers in experiment group involved in the investigation must create an account on the system in accordance with their respective groups set at the beginning of the meeting. The next step is all pre-service teachers uploaded their teaching practice video which has been recorded. Furthermore, the administrator will set the activity for the assessment process in the form of self, peer, and mentor. In the evaluation event, the respective pre-service teacher, peer, and mentor perform the evaluation simultaneously, then the pre-service teacher performs Meta-Reflection on the system based on the third result of the reflections.
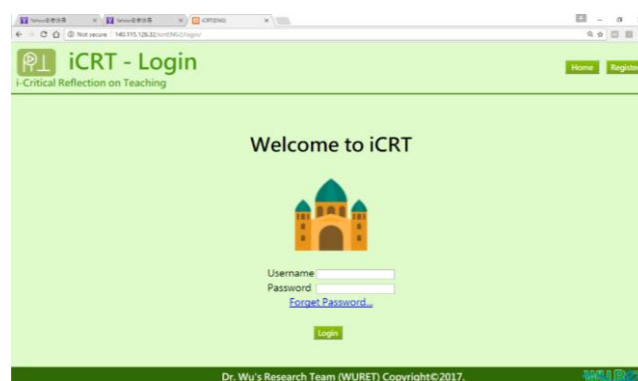

Figure 2. Login Page For Users

In addition, iCRT video-based reflection system was equipped with some features for users. Three user characteristics involved to use this system, they are;

1. Administrator
In this case, researcher as administrator to handle all the activities in the system. The role of the administrator is to manage the user status, the user to set all the activities for pre-service teacher to do the reflection.
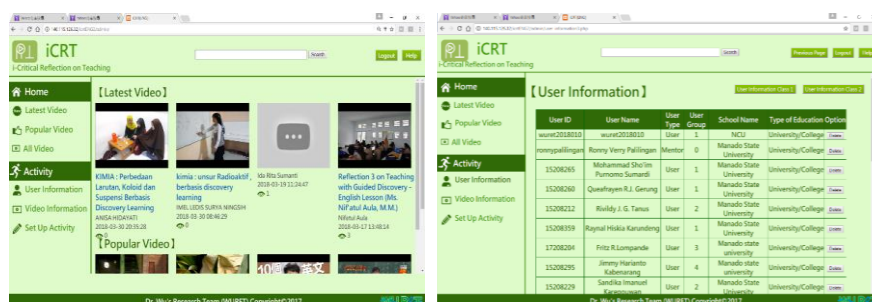

Figure 3. Administrator Work Page

2. User
Pre-service teachers are the users in this system. They post video as well as doing reflections to their own video and also peers.
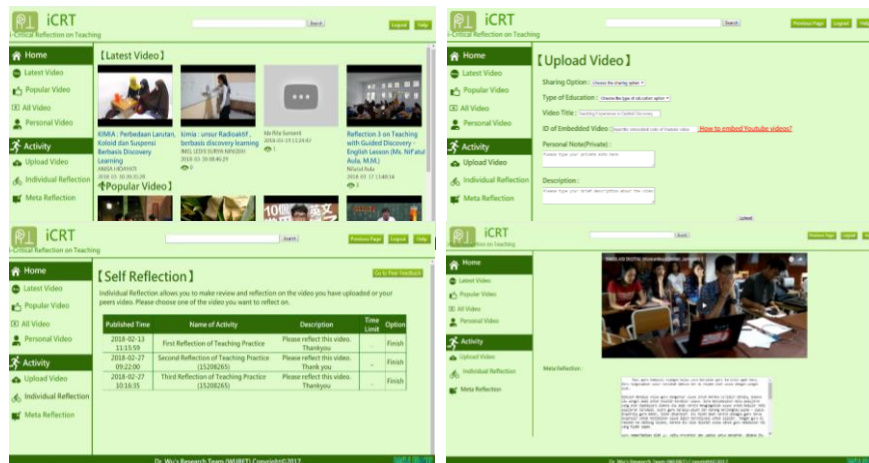
Figure 4. User Work Page

4. Material & Methodology

4.1 Data

The content of the video will be collecting from publish micro teaching practice videos by pre-service teachers. The video will be upload on pre-service YouTube channel the attach the link to the online video-based system. The video-based (VB) and paper-based (PB) reflection was implemented in micro teaching course with 60 pre-service teachers as required course in the 2017/2018 academic year. Thirty pre-service teacher took part in video-based reflection group and 30 pre-service teacher opted for paper-based reflection group and each group divided into 6 small groups consisting of 5 pre-service teachers. Pre-service teachers in each group performed three times teaching practices as well as carried out three times of reflections to assess the results of the teaching practice. The following steps illustrate the process of video reflection.

1. The pre-service teachers in VB-Reflection by other pre-service teachers in small group. Thereto, they used camcorder to record the teaching practice but before they had to plan their lesson (lesson plan).
2. The video-based web system the allowed the pre-service teachers to comments their own video (self-reflection).
3. Pre-service teacher also required to reflect their peers video which noted as peer-feedback.
4. Finally, pre-service teachers encouraged to write the meta reflection by regard of self-reflection and peer comments.

In contrast to VB-Reflection, pre-service teachers in PB-Reflection, they encouraged to reflect in written form but the process of reflections is the same as VB-Reflection which are self-reflection, peer-feedback (comments giving) and meta reflection. To capture the quality and quantity as well as the improvement of pre-service teachers' teaching practice, researcher collected their comments related to participation in the course. The used framework was meaningful learning with ICT.

4.2 Method

The type of research in this study is a quasi-experiment. this type of research is used in experimental research when it has the subjects of both groups not selected at random (Champbell, 1963). In this

research design, the research sample was not randomly chosen to be the by various considerations (purposive sampling). The sample uses a class that has been set by the campus. In research in the field of education, it is very difficult to make such control provisions in the field of exacta. Such quasi-experimental findings are more likely to be applied to a natural setting than pure experiments, since fields involving humans, especially education require a design that treats human beings naturally. This research involves teacher candidates for the information and communication technology education majors that are divided into several classes. Then, two groups divided and become samples which are video-based (VB) reflection as experiment group and paper-based (PB) reflection as control group.

5. Results and Discussion

5.1 Result

First, researcher analyzing the significance of video-based reflection and paper-based reflection on pre-service teacher teaching practice in terms of self-reflection, peer comments (giving comments) and meta reflection in round one, followed by examining the significance of video-based reflection and paper-based reflection on pre-service teacher teaching practice in terms of self-reflection, peer comments (giving comments) and meta reflection in Round two. Then, in the round three, also analyzed the significance of video-based reflection and paper-based reflection on pre-service teacher teaching practice in terms of self-reflection, peer comments (giving comments) and meta reflection. In the next part, analysis pre-service teacher performance on teaching practice from first to third round will be performed.

5.1.1 Analyzing the Significance of Video-Based Reflection and Paper-Based Reflection on Pre-service Teacher Teaching Practice

The first and second round of reflection, pre-service teachers in video-based reflection and paper-based reflection were asked to write comments based on teaching practice video then assessed by Meaningful Learning with ICT framework with five dimensions. To present the result clearly, will be reported in the following three parts; the effect of pre-service teacher self-reflection on teaching practice, the effect of pre-service teacher comments giving to peers on teaching practice and the effect of pre-service teacher meta-reflection on teaching practice. A series of independent t-test was conducted to investigate whether pre-service teacher in video-based reflection group outperformed their counterparts in the paper-based reflection group.

Table 1. First Round of Pre-service Teachers' Self-Reflection

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	(Mean, SD)
Video-based Reflection	1. 60 (0.56)	1.43 (0.57)	1.33 (0.48)	1.30 (0.53)	1.13 (0.57)	6.80 (0.57)
Paper-based Reflection	1.23 (0.50)	1.07 (0.74)	1.10 (0.61)	0.97 (0.61)	0.53 (0.51)	4.77 (0.58)
T	**2.66***	**1.78**	**1.65**	**2.24****	**4.07****	**6.05****

*p < .05, **p <0.01
Video-based Reflection (*n=30*)
Paper-based Reflection (n=30)

Table 2. First Round of Pre-service Teachers' Giving Comments to Peers

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Video-based Reflection	1.36 (0.50)	0.77 (0.20)	1.20 (1.53)	0.95 (0.36)	0.61 (0.13)	4.57 (1.63)
Paper-based Reflection	1.04 (0.25)	0.47 (0.27)	0.80 (0.24)	0.40 (0.20)	0.60 (0.26)	3.63 (0.81)
T	**3.10***	**4.94****	**2.14****	**7.347****	**0.213**	**2.84***

*p < .05, **p < 0.01*
Video-based Reflection (*n=30)*
Paper-based Reflection (n=30)

Table 3. First Round of Pre-service Teachers' Meta Reflection

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean, (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Video-based Reflection	1.17 (0.46)	0.87 (0.51)	1.03 (0.56)	0.80 (0.48)	0.87 (0.68)	4.07 (0.48)
Paper-based Reflection	0.83 (0.53)	0.67 (0.48)	0.67 (0.48)	0.63 (0.49)	0.53 (0.51)	3.33 (1.06)
T	**2.60***	**1.57**	**2.73***	**1.33**	**2.15***	**4.54****

*p < .05, **p < 0.01*
Video-based Reflection (*n=30)*
Paper-based Reflection (n=30)

Table 4. Second Round of Pre-service Teachers' Self-Reflection

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Video-based Reflection	2.63 (0.84)	2.20 (0.79)	1.90 (0.91)	1.90 (0.69)	1.83 (0.73)	10.47 (0.85)
Paper-based Reflection	1.73 (0.83)	1.73 (0.69)	1.40 (0.77)	1.30 (0.47)	1.50 (0.78)	7.76 (1.86)
T	**4.15****	**2.41***	**2.28***	**3.48****	**3.48***	**5.54***

*p < .05, **p < 0.01*
Video-based Reflection (*n=30)*
Paper-based Reflection (n=30)

Table 5. Second Round of Pre-service Teachers' Giving Comments to Peers

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Video-based Reflection	2.38 (0.40)	1.09 (0.38)	1.14 (0.54)	1.11 (0.40)	1.05 (0.27)	6.83 (0.90)
Paper-based Reflection	1.14 (1.28)	0.84 (0.28)	0.95 (0.17)	0.85 (0.19)	0.79 (0.34)	4.64 (0.45)
t	**3.10***	**2.84***	**2.70***	**2.55***	**3.56***	**11.85***

$*p < .05, **p < 0.01$
Video-based Reflection ($n=30$)
Paper-based Reflection (n=30)

Table 6. Second Round of Pre-service Teachers' Meta-Reflection

	Active	Constructive	Authentic	Intentional	Collaborative	Overall
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Video-based Reflection	2.07 (0.85)	2.02 (0.87)	1.73 (0.57)	1. 60 (0.71)	1.50 (0.56)	8.30 (1.44)
Paper-based Reflection	1.26 (0.45)	1.10 (0.31)	1.20 (0.41)	1.03 (0.18)	1.10 (0.31)	5.70 (0.84)
T	**4.48****	**5.75****	**4.11****	**6.28****	**3.49****	**8.44****

$*p < .05, **p < 0.01$
Video-based Reflection ($n=30$)
Paper-based Reflection (n=30)

5.1.2 Analysis of Pre-service Teacher Performance in Teaching Practice with Professional Vision
To analyze the performance of pre-service teacher's micro teaching on their reflection, researcher used Teachers' Professional Vision concept with two distinct sub processes which are selective attention and knowledge-based reasoning. Selective attention refers to teachers' focus on student activities in classroom such as how student interacts with others, how they perform their manners during lesson as well as teacher's focus on specific event in classroom. While knowledge-based reasoning related to teacher's reasoning about issue about student conceptions. In this section, researcher analyze the improvement of pre-service teachers teaching practice from round one to three by using professional vision concept as stated in previous section. As we can see in the table 14, In selective attention, Pre-service teacher tend to focus on Active dimension while doing self-reflection in each round. Based on interview with some pre-service teacher in video-based reflection group, they mainly said that keep encouraging students to use their ICT tool is important to make student continually experience the learning environment with ICT. Here are some statements from pre-service teachers related to interview;

Pre-service teacher 1,
"I think; as a teacher who teach subject related to ICT we have to pay attention in 'Active' dimension because it the core of learning with ICT where teacher must try to encourage student to use their ICT tool not only in the beginning of lesson but it should continually until the end of class even outside classroom"(PS21.VB-R2)
Pre-service Teacher 2,
"As we know that characteristics students are different. So, as teachers we must understand how to make our students learn properly. With learning environment where ICT utilization is needed. The way we encourage students to remain active in using ICT in the classroom is to keep reminding them from the beginning to the end of the lesson". (PS24.VB-23)

Table 7. Content Analysis of Self-Reflection

Category	Dimension	Self – Reflection Round 1				Self- Reflection Round 2			
		VB-Reflection		PB-Reflection		VB-Reflection		PB-Reflection	
		Mean (SD)	%	Mean (SD)	%	Mean (SD)	%	Mean (SD)	%
Selective Attention	**Meaningful Learning with ICT**								
	Active	1.60 (0.56)	23.53%	1.10 (0.40)	26.19%	2.63 (0.84)	25.16%	1.73 (0.69)	22.61%
	Constructive	1.43 (0.57)	21.08%	0.93 (0.64)	22.22%	2.20 (0.79)	21.02%	1.73 (0.73)	22.61%
	Authentic	1.33 (0.48)	19.61%	0.80 (0.48)	19.05%	1.90 (0.91)	18.15%	1.40 (0.77)	18.26%
	Intentional	1.30 (0.53)	19.12%	0.83 (0.46)	19.84%	1.90 (0.75)	18.15%	1.30 (0.47)	16.96%
	Collaborative	1.13 (0.63)	16.67%	0.53 (0.51)	12.70%	1.83 (0.69)	17.52%	1.50 (0.78)	19.57%
Knowledge -Based Reasoning	*Describe*	2.33 (1.02)	34.31%	1.67 (0.71)	34.97%	2.19 (0.74)	20.92%	2.59 (0.68)	33.91%
	Explain	1.87 (0.87)	27.45%	1.20 (1.33)	25.17%	5.79 (1.72)	55.24%	3.00 (0.91)	39.16%
	Evaluate	2.60 (1.12)	38.24%	1.90 (0.83)	39.86%	2.49 (0.71)	23.78%	2.07 (0.65)	27.02%

Self-Reflection 1 VB-Reflection n= 204, Self-Reflection 2 VB-Reflection n= 314, Self-Reflection 2 VB-Reflection n= 493
Self-Reflection 1 PB-Reflection n=126, Self-Reflection 1 PB-Reflection n=230, Self-Reflection 1 PB-Reflection n= 349

5.2 Discussion
Having pre-service teacher teaching practice video by online facilitated self-improvement. They are able to self-reflect and learn from others by watching the taped teaching session anytime and anywhere where internet access is available (Greg and Cheng, 2006). Three round of reflection were conducted due to the majority of studies asked teacher to view their video one two three times. That is, after focusing on the same topic in their teaching practice for some videos, teacher felt the changes they made (Peter and Michael, 2009). Sherin and Van Es (2005) have argued that, through the use of video, participants involved in their research were able to make more comments about their teaching. While, Wright (2008) noticed that the number of things teachers noticed about their teaching practice

increased when use video to reflect rather than reflecting from memory. The result of three rounds of self-reflection revealed there were significant difference in terms of pre-service teacher reflections using meaningful learning with ICT between video-based reflection group and paper-based reflection group. Yang and Cu (2008) highlighted that any category of portfolio including video have potential to foster the self-assessment of learners. As mentioned in research methodology, the major difference of both groups is the mode of work collection where pre-service teacher in video-based reflection using the ICRT system to deal with the evaluation. While pre-service teacher in paper-based reflection using paper to write the reflection. The result of Self-Reflection based on round one to three showed significant difference between two group reflections. As it means that by using video-based evaluation pre-service teacher proposed more reflection on their own teaching practice rather than using paper-based evaluation. As stated by Thompson (1992) and Tripp (2009) that participants in the studies indicated that video reflection were beneficial than reflecting without video. And even though some of dimensions in first stage does not hold significant difference but the overall reflections were holds and the mean score remained higher. Peer assessment of teaching offers many benefits such as improvements in teaching practice and the development of confidence to teach and learn more about teaching (Bell 2005). These processes encompass exchange and feedback between two observers and observe (Fullerton, 1993; Orsmond, 1993). Not only how pre-service teacher receive comments from peers but also the way how pre-service teacher observe their peers video is one of the essential part in peer assessment. The result independent t- test showed that significant differences have been seen in the 3 round of reflections along with the mean scores were increased in each round.

Meanwhile, meta-reflection is necessary for evaluation of teaching practice in classroom. Meta-reflection is about how pre-service teacher link their reflection based on self-reflection and peer-feedback. Regarding to three round of reflections, pre-service teacher in video-based reflection group outperformed their counterpart in paper-based reflection. Moreover, closer look at the mean score of each round, it clearly seen that there were an increase number of comments or reflections in all dimensions of meaningful learning with ICT together with the overall score. There is an interesting pattern in this analysis, where the way teacher requiring students to use their ICT tools actively and creatively by trying multiple strategies to experimenting with a new application indicated as 'Active' dimension showed highest mean scores in all reflections (self-reflection, comment giving and meta-reflection) from first to third stage. Pre-service teacher in this case tend to give more attention to keep their students active to utilize their ICT tools and work creatively with the software which related to topic while in the learning process.

Hereafter, to see the progress of pre-service teacher performance in teaching practice, knowledge-based reasoning noticed that when the teaching practice still has some mistakes, they will tend to give comment as "evaluate". Evaluation means doing judgement of what is seen in the video, e.g.; "*I provided slide presentation on teaching but I think the design of presentation itself need to improve in order to gain student attention*" (PS.02.VB-R3). Moreover, when teacher wrote comments as "Describe" means that saying fact with no further elaboration. Pre-service teacher just says what they see in classroom without give clarification about the event, e.g.; "*I asked student to prepare their laptop or smartphone*" (PS.02.VB-R3). In the studies by Sherin and van Es (2009) and van Es and Sherin (2010), there is a very direct movement towards increased explanation with roughly decreases in description and evaluation. Simpson et all, 2007 argued that, it should be noted that pre-service teacher increasingly explained and evaluated less. Explanation promote that pre-service teacher provide comment or reflection of what he/she see with synthesize idea, e.g. "*After I finished the explanation of the topic which is about 'Network', I instructed student to install the "packet tracer" software. It is because this software is helpful for students to do experiment or simulation about network tools*". (PS11.VB-R3)

As presented in table 14, major change occurred in video-based reflection where the mean and percentage of "evaluate" reminded decrease from Round 1 (2.60, 38.24%), Round 2 (2.49, 23.78%) and Stage 3 (1.13, 6.90%). As it means that pre-service teachers are getting better when they performed the teaching practice from stage 1 to 3. Pre-service teacher in classroom change their interaction with students from 'what question to why or how' questions. They tried to encourage more interaction between students. In line with Peter and Michael, 2009 After focusing on the same topic in their teaching practice for some videos, teacher felt the changes they made. Further, the means score of 'describe' were slightly decrease from stage 1 to stage three (2.33, 2.19, 2.07) respectively. However, "explain" part in video-based reflection group noticed increased dramatically where pre-service teacher in this group performed very well from stage 1 to 3, they increased the ability to synthesize the way when doing reflection. It clearly seen that the mean score from stage 1 (1.87) to stage 2 (5.79) increases up to four times and from stage 2 to stage 3 rises about two times (5.79 to 13.23). As mentioned by Elian & Poyas (2006) that peer feedback helped to encourage the growing awareness of teacher to change themselves in classroom teaching. As well as Marc and Alexander (2016) found that feedback helped pre-service teacher to change their performance in teaching. This means that, the changes made by pre-service teacher in teaching practice not only because they are learning from self-reflection evaluations but also pushed by peer evaluation from their teaching practice in form of meta reflection. Similar to VB-reflection group, PB-Reflection group also showed positive changes in their teaching practice performance but the change is not as significant as those counterparts.

6. Conclusion and Suggestion

6.1 Conclusions

Using video to reflect on and analyze teaching practice is valuable tool in pre-service teacher education program. Therefore, a small workshop was conducted to introduce the iCRT system to pre-service teacher before start the program (micro teaching) and they were looked so excited to the system. During workshop, pre-service teachers were given an opportunity to use the system by testing all the features individually. The major findings in this study were outline as follows. Significant differences found on self-reflection, peer-feedback and meta-reflection in term of the quantity of reflection that pre-service write based on micro teaching video from round one to round three. Means that pre-service teachers in VB-Reflection group provide more comments than their counterparts in paper-based reflection. It consistent to Wright (2008) which noted that the number of things teachers noticed about their teaching practice increased when use video to reflect rather than reflecting from memory. Besides, interesting pattern was found that 'Active' dimension revealed the highest point in each reflection from first to third round, which showed that pre-service teacher in this case tend to give more attention to keep their student active to utilize their ICT tool which related to topic while in the learning process. Furthermore, in terms of improving performance of pre-service teacher in VB-Reflection group while joining micro teaching course indicated positively changed with significant enhancement while those in paper-based reflection also show positive change but in slight category. It can be seen from the means score in each round. In line with Peter and Michael (2009) which stated that after focusing on the same topic in their teaching practice, teacher felt the changes they made.

6.2 Suggestion

Due to the i-Critical Reflection on Teaching (iCRT) system is still in the early stage of development then researcher suggest to make improvement in terms of design interface along with organize more experiment by utilizing this system especially in Indonesia.

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