

# Developing Critical Reflection Skill among Pre-Service Teacher through Collaborative Inquiry Using Social Media

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**Abstract**—Despite the constructive comments provided by the lecturer and teacher educators, pre-service teachers still failed to reflect critically in their teaching skills. Concerning this matter, David (2008) suggests teachers to meet regularly through collaborative inquiry while Croco and Cramer (2005) suggest the use of technology as added-value in improving their teaching skills. By using technology such social media, pre-service teacher should continuously engage in discussions with their lecturer and teacher educator so that they could constantly reflect critically during their teaching practice. The ability to reflect critically among trainee teachers must start with reflective thinking. Thus, the purpose of this study was to develop critical reflection among the pre-service teachers based on a conceptual framework developed from Schon's (1983) reflective practices model and Kilbane's (2007) collaborative inquiry model using social media. The research sample comprised five pre-service teachers from a Malaysian public university which was selected on the basis of their ability in using social media platform. The instruments used in this study were Facebook group and interviews. The transcripts derived from the online discussions among the students, pre-service teachers, lecturer and teacher educators through Facebook group were analysed using coding procedure developed from Henri's (1992) cognitive skills model and Kilbane's (2007) collaborative inquiry model. The findings indicated that the pre-service teachers were able to develop critical reflections during their teaching practice and thus, improved their teaching skills.

**Keywords**—critical thinking, reflective thinking, social media, trainee/pre-service teacher, online discussion

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## I. BACKGROUND

The Malaysian Education Blueprint comprising preschool to post-secondary and higher education have stated that Malaysian students must be able to develop high-order thinking skills so as to prepare for the future employment (Ministry of Education (MOE), 2013; 2015). However, studies from the implementation of thinking skills in the curriculum indicated that teachers had problems in inculcating higher order thinking skill. Teachers are inclined to emphasise on surface level in understanding subject matter and not on thinking on a higher level such as solving problem (MOE, 2012). As a result, teachers were confused over the various definitions of thinking skills and were not able to differentiate between the different levels of thinking (Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, & Suhor, 1988; Nagappan, 2002).

Furthermore, teachers had difficulties to integrate thinking strategies in their lesson plan (Jones, 2008). Various studies have shown that teachers were not skilful enough to apply their knowledge of thinking skills in their classroom practices (Nagappan, 1998, 2001). This had led some education researchers to point to the trainee teachers at tertiary institutions for failing to adopt critical thinking strategy in their curriculum (Suhaili, 2014).

## II. CRITICAL THINKING AND REFLECTIVE THINKING

In order for the trainee teacher to be able to think critically, they must develop reflective thinking. Some researchers define "critical thinking" as a form of higher order thinking or a form of problem solving. Others use the terms "critical thinking" and "higher order thinking" interchangeably. Still some define "critical thinking" as a part of the process of evaluating the evidence collected in problem solving or the results produced by thinking creatively (Crowl et al., 1997; Lewis & Smith, 1993). According to Scriven and Paul (2004), being critical does not only involve acquiring knowledge but using analytical skills continuously. Critical thinking is also viewed as an important skill to enhance thinking through reflections and questioning (Scriven and Paul, 2004). In Malaysia, the Ministry of Higher Education has outlined that graduate with critical thinking must be able to think in a critical, creative, innovative and analytical manner. They are also expected to recognise and analyse complex situation, justify the evaluations, enhance thinking skills, and provide ideas and alternative solutions. Halpern (1996) defines critical thinking as a person, who is purposeful, reasoned and goal directed in making decisions and solving problems so as to achieve desired outcomes.

Thus, critical thinking includes a wide area of thinking skills that leads toward desirable outcomes. On the other hand, reflective thinking is considered as part of the critical thinking process where a person has the ability to analyse and come to a decision on a situation or event that has occurred.

Donald Schön (1983) suggested that the ability to reflect *on* action so that a person could engage in a continuous learning process was one of the important criteria in professional practice. The ability to reflect *in* action (while doing something) and *on* action (after a person has completed a task) is increasingly becoming an indispensable feature of professional training programmes in various disciplines. Thus, trainee teacher must be able to prompt reflective thinking so

that they could develop strategies to adapt new knowledge to the complex situations during their teaching practice.

Each trainee teacher must have an experience as pre-service teacher before they could be a real teacher (Hashim, 2008). It is a compulsory for pre-service teacher to complete their training to become a teacher. They will be observed during an internship or student teaching experience by a mentor or master teacher before they could be granted with a license as professional educators. Pre-service teachers needed to improve their skill in teaching during student teaching experience.

Concerning this matter, David (2008) suggests tertiary institution should have adequate investment in training and facilitation so that the trainee teachers were able to meet regularly through collaborative inquiry. According to Croco and Cramer (2005), teacher education should use technology as added-value in improving their teaching skills. By using technology such as social media, pre-service teacher should be able to engage in collaborative inquiry with their lecturer and teacher educator so that they could constantly reflect critically their constructive comments. Thus, the important question that could be derived from this study was how the use of social media could help pre-service teachers to develop critical reflection.

### III. RESEARCH QUESTIONS

The research questions derived from the study are formulated as follow:

1. How adept are the pre-service teachers at using social media?
2. How do the lecturer and teacher educators invigilate the pre-service teachers on their teaching practice?
3. How does the use of social media help to develop critical reflection among pre-service teachers on their teaching practice?

### IV. THEORETICAL FRAMEWORK

In addressing the research objectives, a conceptual framework was developed from Schon's (1983) reflective practices model and Kilbane's (2007) collaborative inquiry model.

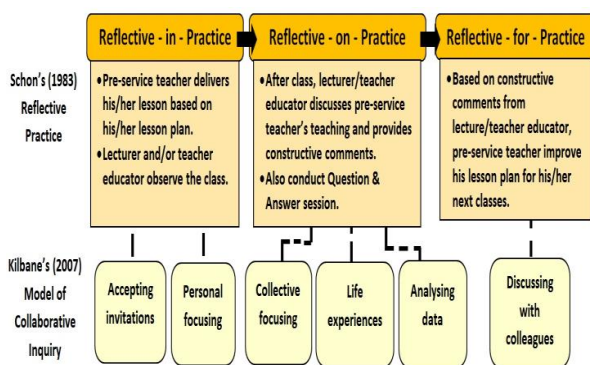


Figure 1: The conceptual framework for this study

Schon's (1983) reflective practices consist of 3 phases which are reflection in practice, reflection on practice and reflection for practice while Kilbane's (2007) model of collaborative inquiry illustrates 6 important steps for collaboration which include accepting invitations, personal focusing, collective focusing, life experiences, analysing data and discussing with colleagues.

The first phase, reflection *in* practice, pre-service teacher delivers his/her lesson based on his/her lesson plan. Then, lecturer and/or teacher educator observe that class. Within this phase, Kilbane' (2007) model include first two steps in this model which are accepting invitations and personal focusing.

The second phase, reflection *on* practice, lecturer/teacher educator discusses the pre-service teacher's teaching experience and provides constructive comments right after the class. During the discussion, the Question and Answer session could be conducted between pre-service teacher and both lecturer and teacher educator. Within this reflection on practice, another 3 steps for collaboration in Kilbane's (2007) model were adopted. They are collective focusing, life experiences and analysing data.

The third phase, reflection *for* practice, based on constructive comments from lecturer/teacher educator, pre-service teacher improves his/her lesson plan for the next classe. In this phase, the last step for collaboration as stated in Kilbane's (2007) model which is discussing with colleagues had been adapted. Figure 1 shows the illustration of both models when combined.

### V. RESEARCH DESIGN

The research design employed in this study is a qualitative action research case study. Action researcher need to understand the uniqueness and the value of each approach in order to derive maximum benefits (Parsons, 2001). Qualitative research rests on a phenomenological foundation as stated in Mason & Bramble (1997). This approach focuses on the needs of researcher to find ways understanding and interpreting event. Patton (1990) states that the stages in qualitative approach include detail information gathering, typically rich in description, and the ability to reflect in-depth through inquiry.

### VI. RESEARCH SAMPLING

This research adopted a purposive sampling. According to Patton (1990), purposive sampling is used by selecting information-rich cases for in-depth study. The respondents were five pre-service teachers who were the undergraduate education students undergoing their teaching practice and having ICT background. Five pre-service teachers were chosen from three difference public schools in Johor Bahru, Malaysia. All respondents were observed by the same lecturer educator/supervisor.

### VII. RESEARCH PROCEDURE

Each pre-service teacher was provided with two Facebook accounts. The first account was used by the secondary students while the second account was for the teacher and lecturer

educators. The teacher educator was given 4 to 6 sessions to invigilate the pre-service teachers while the lecturer educator was given 2 to 3 sessions for the observation as stated in the faculty regulation for teaching practice.

The pre-service teacher delivered his/her lesson based on the lesson plan he/she had prepared earlier. The lecturer and teacher educator observed the pre-service teacher in class separately. Each student, teacher and lecturer educator was asked to provide constructive comments towards the pre-service teachers' teaching progress after every class through the Facebook.

The procedure was based on Schon's (1983) Reflective Practice which are divided into three phases; (i) reflective *in* practice is referred to the on-going comments/suggestions from students, teacher and lecturer supervisors, (ii) reflective *on* practice is conducted after each teaching practice is completed, and (iii) reflective *for* practice was mainly for the pre-service teacher to conduct self-reflection on how to further improve their teaching performance based on the comments/suggestions from the teacher and lecturer educators. Later, an open-ended interview was conducted to each pre-service teacher based on their self-reflection. Then, the data were collected and analysed.

## VIII. RESEARCH INSTRUMENTS

Two important instruments were used in this study. The first instrument was the Facebook (social media) where discussions among pre-service teachers, lecturer and teacher educators, and secondary students took place. Two Facebook accounts were created. The first account was for discussions among the pre-service teachers and the teacher and lecturer educators/supervisor. As for the second account, it involved online discussions between pre-service teacher and their students.

The second instrument was the interviews with the pre-service teachers. An open-ended interview with the pre-service teachers was conducted. The interview questions were based on the objectives of this study which include pre-service teachers' background and their skills in using technology.

## IX. FINDINGS AND DISCUSSIONS

The online discussions among pre-service teacher, lecturer and teacher educator derived from Facebook were printed out. The transcripts were analyzed using Henri's (2002) Model of Interaction Analysis. Data derived from pre-service teachers' interviewer were analysed. The students' online discussions in the Facebook were used to support the overall findings of this study.

### A. *The Pre-service Teachers' Background Using Social Media (respondents)*

To investigate pre-service teachers' background using social media, interviews were conducted. The main focus of the interview was to draw upon respondents' experiences on using social media.

The findings indicated that pre-service teachers were technology savvy and regarded the Facebook as an important social network for communication. As they were

pre-service teachers taking various courses of ICT in education, it was no surprise that they had other social media accounts. These include Blogspot, WordPress, Tweeter, Myspace and Friendster. The pre-service know how to upload on and share video clips from YouTube, link to the Blogspots, and connect to the Instagram. They also used educational videos from YouTube in their classes. Some of the pre-service teachers had created videos as part of their teaching-aided materials and uploaded them on YouTube. The links were then shared in their Facebook accounts. The findings also show that the pre-service teachers had spent an average of two to three hours per day online. They had used use the Facebook app easily on their smartphone or tablet, or using Facebook on a mobile browser and thus, they were continuously online without having any issues. Throughout the teaching practice, the pre-service teachers felt that using Facebook was the easiest way to communicate with their students, lecturer and teacher educators.

As the face-to-face contact between pre-service teachers and lecturer and teacher educators was limited, they exchanged ideas and engaged in discussions online through Facebook on how to enhance their performances in their teaching. After each teaching session, both teacher and lecturer educators provided constructive comments pertaining to their teaching methods in class in the Facebook and the pre-service teachers responded to the comments. The pre-service teachers had sufficient background on using a social media especially the Facebook. Therefore, they were the suitable respondents chosen for the study. This has addressed the first research question.

### B. *Collaboration on Teaching Practice.*

In discussing the invigilation of the pre-service teachers on their teaching practice, the analysis was based on Schon' (1983) reflective practice and Kilbane's (2007) collaborative inquiry model. There are three phases in Schon's (1983) reflective in practice which include reflection-in-practice, reflection-on-practice and reflection-for-practice while Kilbane's (2007) model of collaborative inquiry comprises six important stages which are accepting invitations, personal focusing, collective focusing, life experiences, analysing data and discussions with colleagues.

#### I. REFLECTION-IN-PRACTICE

The Schon's (1983) reflection-in-practice is a phase that took place before the pre-service teachers started teaching in class. In this phase, the two stages of Kilbane's (2007) collaborative model were adopted. Firstly, two Facebook accounts were created by the researcher for two groups. The first group consisted of the pre-service teachers who invited their students to join and engage in discussions. The second group was for the lecturer and teacher educators. The lecturer and teachers educators were added as friends in the Facebook by the pre-service teachers. Then, it followed by the second stage of collaboration of Kilbane's (2007) model which is personal focusing. By personal focussing, it means the pre-service teachers prepared their lesson plans before the class.

## II. REFLECTION-ON-PRACTICE

The second phase of Schon's (193) reflective practice is reflection-on-practice which took place in class when pre-service teachers delivered their lesson plan. In this phase, the three stages of Kilbane's (2007) collaborative model were adopted. The first stage is collective focussing. Both the lecturer and teacher educators viewed the pre-service teachers' lesson plans and provided their constructive comments. They also gave suggestions on how pre-service teachers should deliver their lessons. The second stage is life experiences. Taking into account the comments from both lecture and teacher educators on the preparation of lesson plan, the pre-service teachers delivered their lesson contents in class. The lecturer and teacher educators were in class as well to invigilate the teaching process of the pre-service teachers. The third stage of Kilbane's (2007) collaborative model is analysing data. After class, the lecture and teacher educators discussed with the pre-service teachers offering ideas or a critique of their teaching strategies. As the in-class meeting did not provide sufficient time, the discussions continued through Facebook. On another Facebook account, students continued their conversation with the pre-service teachers on the subject matter that they had learned in class and at the same providing feedback on the teaching.

## III. REFLECTION-FOR-PRACTICE

The third phase of Schon's (193) reflective practice is the reflection-for-practice where the pre-service teachers making a judgment on how they had performed so far and which areas that needed to be further enhanced based on their experiences and feedbacks from the students, and teacher and lecturer educators. In this phase, the stage of discussing with colleagues of Kilbane's (2007) collaborative model was adopted. Pre-service teachers gained information through the formal discussions with the teacher and lecturer educators and routine feedbacks from the students through Facebook.

This means that it was time for the pre-service teachers to reflect on their knowledge and practice so as to assist them to reach a better performance. Comments on particular aspects of their lesson plans were extensively discussed with the teacher and lecturer educators and the discussions would continue in a more streamlined and effective dialogue. The students also provided effective, timely feedback throughout the lessons. Apart from class discussion, an online discussion forum allows more students to provide feedback after the class had been conducted. By inviting students to participate in the online discussion and responding to their feedbacks, it promoted more equitable discussions. The continuous constructive comments from the students from the Facebook could also lead to a good discussion. Therefore, the pre-service teachers developed their critical skills using reflections and feedbacks from both students and teacher and lecturer educators on their teaching in class. The pre-service teachers had successfully collaborated with the students, teacher and lecturer educators through a Facebook group. The concepts of

Schon' (1983) reflective practice is very simple as 'reflecting while you're doing it' and 'reflecting after you're done it' were used in this research.

This has addressed the second research question on how the pre-service teachers were invigilated by the teacher and lecturer educators.

### C. Developing Critical Reflection Using Social Media.

The use of online discussion through Facebook had largely complemented the face-to-face meeting with students and teacher and lecturer educators. To investigate how the Facebook had helped the pre-service teachers develop their critical reflection, the discussions through posting messages with the teacher and lecturer educators as well as the students were analysed. The interaction analysis model by Henri (1992) was used.

Table 1: The interaction analysis model (adapted and modified from Henri, 1992, p. 129)

Stage	Reasoning Skills	Analysis of Online Transcripts
I	Elementary clarification	Observing or studying a problem identifying its elements, and observing their linkages in order to come to a basic understanding
II	In-depth clarification	Analyzing and understanding a problem to come to understanding which sheds light on the values, beliefs, and assumptions which underlie the statement of the problem
III	Inference	Introduction and deduction, admitting or proposing an idea on the basis of its link with propositions already admitted as true
IV	Judgment	Making, decisions, statements, appreciations, evaluations and criticisms Sizing up
V	Strategies	Proposing co-ordinate actions for the application of a solution, or for allowing through on a choice or a decision

The overall number of postings from all pre-service teachers, teacher and lecturer educators and the students through Facebook is 100 messages. The Facebook accounts created by the pre-service teacher A had 19 postings while pre-service teacher B had 19 messages. The pre-service teacher C

and D had 17 and 22 messages respectively. The pre-service teacher E had 23 messages posted in his Facebook.

Table 2: The number of postings on pre-service teachers' based on Henri's (1992) Model of Cognitive Skills

Pre-service teacher	The number of postings based on Henri's (1992) Model of Interaction Analysis					Subtotal
	Phase I	Phase II	Phase III	Phase IV	Phase V	
A	2	3	3	5	6	19
B	4	2	3	2	8	19
C	3	2	2	5	5	17
D	3	2	4	7	6	22
E	5	3	3	6	6	23
TOTAL :						100

The overall number of postings from all pre-service teachers, teacher and lecturer educators and the students through Facebook is 100 messages. The Facebook accounts created by the pre-service teacher A had 19 postings while pre-service teacher B had 19 messages. The pre-service teacher C and D had 17 and 22 messages respectively. The pre-service teacher E had 23 messages posted in his Facebook.

In order to identify the postings according to the phases of Henri's (1992) model of cognitive skills, two raters were employed. Based on Henri's (1992) model, phase III, phase IV and phase V are considered as Higher Order Thinking Skills (HOTs). The table shows more than 55% of the total posting by each of pre-service teacher which considered as HOTs.

For the pre-service teacher A, the number of messages categorised under Phase I is two and Phase II is 3. There are 14 out of 19 messages were considered as HOTs which has the percentage of 73.7%. In the beginning, pre-service teacher A faced a problem in controlling the class and had limited time for teaching. Based on the first supervision with the lecturer and teacher educators, it was understood that this pre-service teacher lacked of management skills. Throughout the discussions among pre-service teacher, lecturer and teacher educator in the Facebook, the pre-service teacher was advised not to exceed his teaching period in classroom. The pre-service teacher should have properly planned his time in completing the lesson in class. After the discussions, pre-service teacher made an improvement in his teaching and overcame the problems successfully. First, the pre-service teacher determined how much objectives should be achieved based on students' ability and estimated to complete the lesson on time. For example, for the last ranking class, only 2 learning objectives should be sufficient. Besides that, in order to gain students' attention during a lesson, pre-service teacher called the students by their names so as to attract their attentions. The in-depth discussions throughout Facebook with the teacher and lecturer

educators had helped the pre-service teacher A to improve his teaching skills.

For the pre-service teacher B, the number of messages categorised under Phase I and Phase II is similar that is 6 postings for each phase. Thirteen messages from the remaining three phases are considered as HOTs which has the percentage of 68.4%. In the beginning of her teaching practice, pre-service B faced a problem with her voice projection. During her first supervision by the lecturer and teacher educator, this pre-service teacher was advised to bring a mini microphone device/system needed to improve in her voice projection. Because of her low voice projection, the students sitting at the back could not hear her voice clearly and thus, they did not pay attention. In the following class, the lesson was delivered efficiently. Her students did not complain of her voice projection and were able to focus on their lessons. Through Facebook group discussions with the students, the pre-service teacher had emphasised in taking students' comments very seriously, and found them very helpful. She addressed them in the following class. The pre-service teacher had definitely thought that she had improved her teaching skill

For the pre-service teacher C, the number of messages categorised under Phase I is 5. Phase II has also the same number of messages that is 5. All 12 messages are considered as HOTs which has the percentage of 70.6%. According to the lecturer and teacher educators, during the teaching invigilation, they found out that the pre-service teacher C paid attention only to the students in front seat. This was highlighted in the Facebook discussions. The lecturer educator suggested that the pre-service teacher to address the matter. For the students sitting at the back, they also felt that they had been neglected by the pre-service teacher. The students brought this concern back to the pre-service teacher through their comments in the Facebook. In the following class, the questioning techniques were heavily used in her classroom instruction. The pre-service teacher named the question before identifying students sitting at the back to answer it. The students were also encouraged to ask questions throughout the class. This had improved students' participation in class including calling on students who did not raise their hands when question was posed to them.

For the pre-service teacher D, there were 5 messages categorised under Phase I and another 5 messages under Phase II. There are 17 out of 22 messages were considered as HOTs which has the percentage of 77.3%. The main problem highlighted by the lecturer and teacher educators in the Facebook discussions was the time management. First, in a class of 22 students, the pre-service teacher had employed teaching strategy to engage students working in small group. The pre-service teacher assigned the students to work in a group of 2 members and working on different aspects of a single topic. Unfortunately, it was obviously not possible to cover all group presentations in a single period of 35 minutes. Based on her discussions with teacher and lecturer educators through Facebook, this was the stage where the pre-service teachers needed to make adjustments. Instead of 2 members, the pre-service teacher had determined that each small group should consist of 4 to 5 students and the presentation should be

conducted in double period learning session only. Through the discussions on Facebook with the teacher and lecturer educators, it had helped the pre-service teacher to overcome her problem in her teaching practice.

For the pre-service teacher E, the number of messages categorised under Phase I and Phase II is similar that is 11 postings for each phase. Twelve messages from the remaining three phases are considered as HOTS which has the percentage of 56.5%. According to the lecturer and teacher educators, although the pre-service teacher E was good at teaching in classroom, she had a problem writing her reflection in lesson plan. The teacher educator provided a sample on how to make value judgements that could help the pre-service teacher to structure his reflective writing after completed each class. At the end of each teaching practice, the pre-service teacher was able to make decisions, when to step back, and when to reflect on her teaching strategies. Further discussions through Facebook had helped her to develop more insight into and control over the revising process of her teaching in classroom. It had also made her realise that making poor judgement or reflection on her teaching practice would bring adverse impact in her profession as a teacher soon.

The study indicated that the pre-service teachers were able to develop critical reflection as they managed to think critically in order to improve their teaching skills. This has addressed the third research question.

The only limitation was the pre-service teachers' technology experience. Prior to the study, the respondents (education students or pre-service teachers) should be examined on their perception about technology in the classroom. It is vital that they know how to integrate the technology in classroom teaching and this would have helped them to discuss online effectively through Facebook.

### CONCLUSION

The researchers conducting studies on pre-service teachers have always been looking for ways to improve their classroom teaching. Online discussion through Facebook continues to be an important feature for the study of this magnitude. It is time to ponder the constant use of social media to improve various aspects of poor performance of teaching practice to more specific remedial actions in teaching in classroom and thus, develop their critical reflection. Maximising instructional time conducting discussions in-class and online with students and teacher and lecturer educators, and eventually, this could be the additive or cumulative effect of teacher effectiveness. It's important for pre-service teachers to recognise that their students continue to learn all the time in every class of their teaching practice. The evidence of systematic improvement on their teaching practice and served as a starting benchmark for their career in teaching profession.

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