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Measuring Teachers Reflective Thinking Skills

Fariba Mirzaei^a, Fatin Aliah Phang^b, Hamidreza Kashefi^c

*Department of Science, Mathematics and Creative Multimedia Education,
Faculty of Education, Universiti Teknologi Malaysia, UTM Skudai, 81310 Johor, Malaysia
^amhfmirzaei@yahoo.com, ^bp-fatin@utm.my, ^cHamidreza@utm.my*

Abstract

Observation, communication, team working, judgment, and decision making are important teaches reflective thinking skills that are required for teachers if they want to be reflective thinker. This paper proposes two instruments which are Reflective Thinking Open-Ended Questionnaire and Interview Questionnaire to measure teachers' reflective thinking skills. The Reflective Thinking Open-Ended Questionnaire allows teachers to answer the questions in their own words in explaining the meaning of reflective thinking and understanding the gaps if there are between teachers' reflective thinking skills and the reflective thinking skills that they need in their teaching. The Interview Questionnaire is used to support depth understanding the skills that teachers use in their teaching. Measuring teachers' reflective thinking skills by these instrument help to identify teachers' reflective thinking weakness and strength and find the ways for improving their reflecting thinking.

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1. Introduction

Educational reform promotes learning environments that encourage meaningful learning rather than rote learning and create a different view of teaching and learning that are the ways of supporting learning and teaching. One of these reform efforts is to develop teachers who are reflective about teaching and learning (Lowery, 2003). In fact, teachers need to develop the skills for reflective practice, research on the job and working in diverse environments (Duthilleul, 2005).

Reflective teacher education is an alternative approach to the initial teacher preparation program and in-service professional development (Dewey, 1933; Cruickshank, 1985; Schön, 1987; Sparks-Langer and Colton, 1991; Mok,

Corresponding author: Fariba Mirzaei
E-mail: faribamirzaei@gmail.com

1994; Farrell, 2001). The central goal of reflective teacher education is to develop teachers' reasoning about why they employ certain instructional strategies and how they can improve their teaching to have a positive effect on students. It is apparently very important that teachers should possess the competencies, abilities, knowledge, and skills necessary to carry out the teaching process in an effective and efficient way (Rosenberg, Sindela, and Hardman, 2004).

The learning process for teachers must be about their practice, must be built on experiences derived from their practice and; therefore, the learning of experience followed by reflection (Harrison et al., 2006). Regarding to Donald et al. (2006), teaching is a complex activity that requires teachers to think about or reflect on what they do. Good teachers can become even more effective by reflecting on teaching. According to this view, teacher reflection promotes critical approaches to one's teaching and, consequently, leads to better practice (Oser et al., 1992; Artzt and Armour-Thomas, 2001; Mayes, 2001; Swain, 1998). Reflection is commonly reported as a process of self-examination and self-evaluation that teachers should regularly engage in to interpret and improve their professional practices (Husu, Toom, and Patrikainen, 2006). Danielson (1996) noted that reflection refers to an activity or process in which an experience is recalled, considered, and evaluated, usually in relation to a broader purpose. It is a response to past experience and involves conscious recall and examination of the experience as a basis for evaluation and decision-making and as a source for planning and action. With experience, teachers become more discerning and can evaluate their successes as well as their errors.

Dewey (1933) identified reflection as one of the modes of thought: "active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the future conclusions to which it tends." (p. 7). Schön (1987) made the term "reflective thinking" an important theme in teacher education. Reflective thinking as a popular term in teacher education is a mode of thinking which would be used correspondingly with modes of thinking like metacognition, critical thinking, analytical thinking, and creative thinking among modern education approaches during education process (Gurol, 2011). The most important factor which separates the reflective thinking from all these thinking types is that it presents as a solution interpreting, deferring, translating, arrogating to the individual, comprehending the issues thought in the school and making predictions for the future.

Dymoke and Harrison (2008) noted that the five reflective thinking skills core competent thoughts are observation, communication, judgement, decision making, and team working. All five skills of reflective thinking are important professional skills and are applicable to all stages of teacher learning, including initial teacher education. Teachers can develop reflective thinking skills by the interaction provided through a dialogue journal, purposeful discussions, and teaching portfolios (Cruickshank et al., 2006). Teachers' reflective thinking tools such as recording, writing, drawing, photography, learning journal, portfolio, lesson plan, co-teaching, collaborative practitioner enquiry and action research can be used to support teachers' reflective thinking skills (Dymoke and Harrison, 2008).

In this paper, first we discuss about five teachers' reflective thinking skills including observation, communication, judgment, decision making, and team working. Then, the ways of measuring teaches reflective thinking skills are put forward. (More explanation)

2. Teachers Reflective Thinking Skills

Observation, communication, judgment, decision making, and team working are five important reflective thinking skills. In this section, all teachers' reflective thinking skills are explained.

2.1. Observation Skill

The tools of observation take account of noticing teachers feeling and behaviours, and include noticing, marking and recording in order to distinguish something from its surrounding. Noticing involves recording brief but vivid details which allow teachers to recognise the situation for itself. There are various ways in which teachers might do this: through writing, drawing, or video- and audio-recording, and even photography an artefact or product of teaching (Dymoke and Harrison, 2008).

2.2. *Communication Skill*

Communication tools in relation to reflective practice can be developed in a variety of ways: through the keeping of a personal learning journal or diary, or through a more formal professional portfolio, supported by a system of formal tutorials with a mentor (Dymoke and Harrison, 2008). Since critical reflection on practice is an active and conscious process (Schön, 1983, 1987, 1991), teachers can start by asking their self a series of open questions about particular teaching episode or a critical incident within that episode, and jotting down their impressions using one of these ways of recording: What have I been doing? What am I doing? What has happened? What is happening? What led up to this? And why?

2.3. *Judgement Skill*

In order to analysis a classroom, event or situation, teachers should try to be absolutely clear what that event or situation consists of. If teachers, too, are involved in that event or situation then this view of the event needs to be impartial. Just describing what happens during the event can be problematic as well. Teachers might, rather skillfully, combine details of the event with their judgment, or with additional explanations and theories. As a judge, it is important to find the best idea and not wait for the perfect idea (Dymoke and Harrison, 2008).

2.4. *Decision making Skill*

Decision making has been defined as selecting a course of action to achieve a desired purpose. In decision making skills, using different types of reflective practice strategies are important and they allow teachers to see, and cope better with, the complexities of teaching and teachers make decisions for further actions. In fact, reflective practice strategies help teachers to probe the strength and weakness of a lesson more deeply through dialog and critical reflection on practice.

2.5. *Team working Skill*

Teacher will find themselves working in a number of teams from the start of their teaching career: their subject or curriculum team, their pastoral team and cross-curricular groups working on particular issues such as personalized learning and aspects of assessment, and so on (Dymoke and Harrison, 2008). Co-teaching, collaborative practitioner enquiry and action research are tools that prop team working skill of teachers.

3. **Measuring Reflective Thinking Skills**

This paper proposes the instruments that are used to identify teachers' reflective thinking skills are Reflective Thinking Open-Ended Questionnaire (RTOE) and Interview Questionnaire.

3.1 *Reflective Thinking Open-ended Questionnaire (RTOE)*

Open-ended questions allow participants to answer the questions in their own words in explaining the meaning of reflective thinking and the reflective thinking skills that they use in their classroom. Open-ended questions cannot be answered with a simple "yes" or "no" response and thus encourage the interviewee to provide more information (Davies and Beaumont, 2007).

In this study, the open-ended questions consist of 6 questions that is started with the meaning of reflective thinking, teachers' reflective thinking skills, and the ways of using these skills by teachers in their class (Question1). This is followed by a question (Question 2) to understand these skills are from teachers' experiences or training. The Question 3 is prepared to identify the gaps between inexperienced and experienced teachers' reflective thinking

skills and the skills that they need to apply in the class. The open-ended questionnaire is ended by asking question to understand the ways of reducing the gap if there is and the role of experience on having the reflective thinking skills are asked in the next questions (Question 4 and Question 5). The open-ended questions are as in Appendix A.

3.2 Interview Questionnaire

Interviews are suited to working with small sample and are useful for studying specific situations or for supplementing and validating information derived from other sources used for making safety diagnoses. The semi-structured interview is the most common form of interviewing (Rubin and Rubin, 1995). Many researchers like to use semi-structured interviews because questions can be prepared ahead of time. This allows the interviewer to be prepared and appear competent during the interview. Semi-structured interviews also allow informants the freedom to express their views in their own terms. Semi-structured interviews can provide reliable, comparable qualitative data (Rubin and Rubin, 1995). In it, the interviewer has worked out a set of questions beforehand, but intends the interview to be conversational. To do so the interviewer can change the order of the questions or the way they are worded. The researchers can give explanations or leave out questions that may appear redundant. Semi-structured interviews offer topics and questions to the interviewee, but are carefully designed to elicit the interviewee's ideas and opinions on the topic of interest, as opposed to leading the interviewee toward preconceived choices (Cohen, 2006).

In this paper, the semi-structured interview questions constructed based on reflective thinking skills including observation, communication, team working, judgment, and decision making and also tools that support these skills. In fact, reflective practice strategies help teachers to probe the strength and weakness of a lesson more deeply through dialog and critical reflection on practice. The semi-structured interview questions including 27 questions in five parts based on the five reflective thinking skills and tools that explained above. The questions including five parts for semi-structured interviews are in Appendix B.

3.2.1 Part 1: *Interview Questions for Observation Skill*

According to Dymoke and Harrison (2008), observation skill is supported by some reflective thinking tools such as video or audio recording, writing, drawing and photography. Therefore, observation skill comprised of six questions to understand this skill that weather teachers use in their classes. For measuring this skill, six questions are designed to ask the teachers that weather they apply observation skill in their classes. The Question 1 is asking to use of observation tools (video- and audio-recording, writing, drawing, and photography) for recording classroom teaching and also ask about the benefits of these practices or tools.

The Questions 2 and 3 are designed to understand the importance of classroom recording and using another observation tools. The ways of assessing teachers' teaching and improving of their teaching are asked in Questions 5 and 6.

3.2.2 Part 2: *Interview Questions for Communication Skill*

Communication skill supported by learning journal and diary or professional portfolio as reflective thinking tools so based on these tools 8 questions designed. The Questions 7, 11 and 12 are designed to ask teachers have communication with their self, another teachers and students. The Question 8, 13 and 14 are asked whether teachers' communication with their self, another teachers and students can help and support teaching methods. Having communication tools such as lesson plan, learning journal and dairy or portfolio and also helping these tools to support teaching are asked in Questions 10 and 11.

3.2.3 Part 3: *Interview Questions for team working Skill*

Co-teaching, collaborative practitioner enquiry and action research are tools that prop team working skill of teachers. Four questions constructed for this part. The Question 14 asks for having co-teaching with other teachers

and what benefits do they see for co-teaching. In Question 15 is asked to have any action research in their classes and why teachers want to do action research.

3.2.4 Part 4: Interview Questions for judgment Skill

In judgment skill of reflective thinking teachers must solve classroom event or situation that occur impartial and describe it during the event can be problematic and also ask why the event occurred and provide an interpretation for situation. In this part 6 questions designed. For knowing whether teachers evaluate their teaching method, evaluating from another teachers and students are asked in Questions 16 and 19. In question 20 is ask to know whether teachers like students and another teachers evaluate their teaching method. In Question 17 is about whether teachers ask some questions to their self about teaching method. In question 18 is asking to describe the strengths and weakness of their teaching method and what are their suggestions to improve the weakness.

3.2.5 Part 5: Interview Questions for decision making Skill

In decision making skills, using different types of reflective practice strategies are important and they allow teachers to see, and cope better with, the complexities of teaching and teachers make decisions for further actions. In this part 6 questions designed. The question 22 is asked how teacher solve a problem when she/he face the problem and in question 26 is asked to know how they know their decision is correct and in question 27 we want to know have they ever test their decision.

4. Conclusion

The most important goal of this paper was to identify teachers' reflective thinking skills. This paper serves as a first step to understand the teachers' reflective thinking. To sum up, five reflective thinking skills of teachers as observation, communication, team working, judgment, and decision making can be improved based on some reflective thinking tools such as recording, writing, drawing, photography, learning journal, portfolio, lesson plan, co-teaching, collaborative practitioner enquiry and action research. Moreover, teachers use these reflective thinking skills during their teaching processes to develop their reflective thinking.

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Appendix A. Reflective Thinking Open-Ended Questionnaire

1. Do you know what is the meaning of reflective thinking is? Yes No If yes, please explain.
2. What reflective thinking skills you use in your physics classes? Please explain, how do you use these skills? Please tick your answer in the table below.

Reflective Thinking Skills	√	Use of Skills
Communication		
Teamwork		
Observation		
Judgment		
Decision making		

Others

3. Which one of the reflective thinking skills that explained above you get from your experience? Which one from the training?
4. Are there any gaps (mismatch) between your reflective thinking skills that you have and the reflective thinking skills that you need for teaching in the physics class? If yes, Please explain.
5. What are your efforts, if any, in reducing the gaps?
6. Do you agree on the effective role of experience on having these skills? If yes, please explain.
7. In your opinion, are there any differences between experienced and inexperienced teachers in case of reflective thinking skills? If yes, please explain how we can support inexperienced teachers’ reflective thinking?

APPENDIX B. Interview Questionnaire

Part 1: Observation Skill

1. Do you use video- and audio-recording, writing, drawing, and photography in your classroom teaching? If yes, what benefits do you see from these practices or tools?
2. What is importance to record your classroom? Why is it important?
3. Do you use other observation tools in your class except the above tools? Please explain your respond.
4. Please explain, how you asses your teaching to check the relevant of your teaching methods?

5. In the assessment of your teaching, which one of the following characteristics of your teaching are assessed? Please tick your answer in the table below and explain why?

Characteristics of Your Teaching	√	Why?
What you most like to do (in your work)		
Your biggest difficulties (in your work)		
Your greatest successes (in your work)		
Your greatest pleasures (in your work)		
Your greatest strengths (in your work)		
Your biggest weakness (in your work)		

Others -----

6. If you assess your teaching in the classroom please answer the following questions.
- Do you think the assessment can help you to improve your teaching? If yes, in which way?
 - How do you use the results obtained from these assessments in your teaching?

Part 2: Communication Skill

7. Have you ever asked yourself the same questions with following questions about a particular teaching episode? Please explain why?

- What have I been doing? / What am I doing?
- What has happened? What is happening?
- What led up to this?
- And why?

- Do you think asking these questions support your teaching? If yes, please explain how?
- Do you have any lesson plane, learning journal, dairy or portfolio as tools of communication skill? If yes, please explain.
- Do you think these tools support your teaching? What are the advantages and the disadvantages of these tools to improve your teaching?
- Do you think asking about the relevant of your teaching method from your students can improve your teaching methods? If yes, how you ask them? What questions do you ask?
- Do you have any communication with other physics teachers about your teaching? If yes, please explain.
- Do you think having communication with other physics teachers contributes to your teaching? If yes, please explain in what ways.
- In your opinion, how could you communicate successfully with your students and other physics teachers about your teaching method or the situations that you will encounter in your classroom?

Part 3: Team working Skill

- Do you work together with other physics teachers about your teaching? If yes, please explain.
- Do you think team working can support your teaching? What benefits do you see for team working?
- Do you have any co-teaching with other physics teachers? If yes, please explain. What benefits do you see for co-teaching?
- Did you any action research in you classroom? Why you wanted to do action research?

Part 4: Judgment Skill

- Have you ever thought about evaluating your teaching methods in the classroom? If yes, Please explain.
- Do you ask to yourself about your teaching method? If yes, what questions do you ask?

21. Could you describe the strengths and the weaknesses of your teaching methods? What are your suggestions to improve the weakness?
22. Do you like your students or other physics teachers evaluate your teaching method? Have you ever asked them? If yes, please explain.
23. Do you think evaluating your teaching method by your students and other teachers can help you to improve your teaching method? If yes, please explain how.
24. Supposed one of your students did not finish his/her work, do you think why the student is apparently not finishing his/her work? Please write your judgments and answers the following questions?
What led you to make these judgments?
To what extent was your judgment based on sound and valid data or information?
How far were the consequences of your judgments justified?

Part 5: Decision making Skill

25. When you face a problem in the classroom setting, how do you solve the problem?
26. How you know and probe the strengths and weakness of your teaching in the class?
27. After your teaching have you ever ask to yourself what went well and what did not go so well in your class?
28. Do these weakness and strengths can help you to make decisions for future actions? If yes, please explain in which way?
29. How you know your decision in your classroom is correct?
30. Have you ever test your decision making? If yes, please explain.