Development of the Reflective Thinking Instructional Model for Student Teachers

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[Abstract] The aim of this study has been to investigate the development of reflective thinking in an instructional model among student teachers in Roi-Et Rajabhat University, using the qualitative methods of observation, interview, recording short notes, and group discussion. The model under development that was used assessed teaching and learning targets, social system relationships, and indirect and direct specifications of student outcomes, performances, and specifications. Teaching and learning processes and student reflections were related and supported the social system to be promoted by this model. Conceptualization affecting steps to administer of students' activities, namely the persuading thinking, the experiencing reinforces, the experimental exchanged report, and the recalling reflections scales. The effects of the model were to their behaviors and recall thinking of their experimentation and environment. Specification problems and aims with their decisional and believable positions on empirical data were satisfied. Students were able to select and presume the positions of their management to indicate their solved problems and developments. Suggestions for those learners' ideas that created evidence of their conclusions were, thus, provided.

[Keywords] development; instructional model; interview; learning; observation; qualitative method; reflective thinking; Roi-Et Rajabhat University; student teachers, teaching

Background

A teacher (also called a schoolteacher) is a person who provides education for students. The role of a teacher is often formal and ongoing, carried out at a school or other place of formal education. In many countries, a person who wishes to become a teacher must first obtain specified professional qualifications or credentials from a university or college. These professional qualifications may include the study of pedagogy, which may otherwise be referred to as the science of teaching. Teachers, like other professionals, may have to continue their education after they qualify, a process known as continuing professional development. Teachers may use a lesson plan to facilitate student learning, providing a course of study, known as the curriculum. A teacher's role may, however, vary among cultures. In some countries, formal education can take place through home schooling. Informal learning may be assisted by a teacher occupying a transient or ongoing role, such as a family member, or by anyone with particular knowledge or skills in the wider community setting (Wikipedia, 2014).

Reflective thinking that is mentally-engaging in the cognitive processes so as to understand conflicting factors in a situation is a critical component of the learning process (Atkins & Murphy, 1993; Dewey, 1933; Moon, 1999; Schön, 1991). This mental engagement results in a person's actively constructing knowledge about a situation in order to develop a strategy to proceed within that situation. For example, after a series of instructional lessons on ecology and waste management, biomes, life cycles and urban development, students may be given the task of determining whether or not a parcel of land should be protected and then asked to justify this position. Students must reflect on their previous understanding of an issue and their newly acquired knowledge to respond to it. In this case, they must think about the situation at hand and reflect on how their new knowledge can be used to address it, ultimately developing a potentially viable solution to land-protection. Thus, reflection helps students to develop higher-order thinking skills by prompting them to (a) relate new knowledge to their prior understanding, (b) think in both abstract and concrete terms, (c) apply specific strategies to novel tasks,

and (d) understand their own thinking and learning strategies (Hmelo & Ferrari, 1997).

Critical thinking and reflective thinking are terms that are often used synonymously. Critical thinking is generally used to describe thinking that is purposeful, reasoned, and goal directed, the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task (Halpern, 1996). Reflective thinking, on the other hand, is generally understood as a part of the critical thinking process, referring specifically to the processes of analyzing and making judgments about something that has taken place. Dewey (1933) suggests that reflective thinking is an active, persistent, and careful consideration of a belief or supposed form of knowledge and of the grounds that support that knowledge, including in this definition the further conclusions to which that knowledge leads. Learners are aware of and control their learning by actively participating in reflective thinking –– assessing what they know, what they need to know, and how they bridge that gap –- during learning situations. Critical thinking involves a wide range of thinking skills leading toward desirable outcomes, while reflective thinking focuses on the process of making judgments about what has happened. However, reflective thinking is most important in prompting learning during complex problem-solving situations because it provides students with an opportunity to step back and think about how they actually solve problems, as well as how a particular set of problem-solving strategies might be appropriated for achieving their goal (Moon, 1999).

Why is reflective thinking important? Modern society is becoming more complex, and information is becoming increasingly available and is changing more rapidly, prompting users to constantly rethink, switch directions, and change problem-solving strategies. Thus, it is becoming of increasing importance to prompt reflective thinking during learning so as to help learners develop strategies for applying new knowledge to the complex situations in their day-to-day activities. Reflective thinking helps learners develop higher-order thinking skills by prompting learners to a) relate new knowledge to prior understanding, b) think in both abstract and conceptual terms, c) apply specific strategies in novel tasks, and d) understand their own thinking and learning strategies (Dewey, 1933).

The term "reflective practice" has firmly entered the vocabulary of professional education in a number of different fields, including nursing, teacher education, and social work. But what is "reflective practice" and what does it mean to be a "reflective practitioner"? Boud (1987) has defined reflection as "... a conscious activity in which we engage to explore our experiences and to develop new understandings and conceptualizations." Learning from experience is one of the most fundamental forms of learning, but it has tended to be less valued within formal education until recently. In the 1970s, the information transmission model of education was predominant: in this model the role of the educator was to provide knowledge, and the role of the learner was to absorb it. Paulo Freire (1987), the Brazilian educationalist, argued against this "banking" model of education characterized by the educator making "deposits" in a passive, disempowered learner. Other educationalists such as David Kolb (1984) argued that greater emphasis ought to be placed on the learner's ability to actively construct knowledge. Kolb's model of experiential learning was founded upon earlier work by Dewey (1933), Lewin (1942), and Piaget (1960) characterized learning as a process whereby each individual reflected on his/her experiences so as to construct and reconstruct his/her understanding and skills. Kolb's model of experiential learning is represented in a four-stage cycle, beginning with concrete experience and followed by reflection, abstract conceptualization, and active experimentation.

Dewey (1933) placed great emphasis on reflective thought and saw it as an important part of a cycle that enabled people to learn from experience. He believed that reflective thought began when students found themselves having an experience that raised some difficulties or dilemmas, which he referred to as a "felt difficulty." From this experience, Dewey (1933) argued, teachers then set about reflecting on the problem by asking themselves the question "What's going on?" Then students conceptualized the problem, considering and analyzing potential solutions and asking "What might I do?" Students experiment or act by trying out a possible solution. Finally, students consider whether or not that solution was effective, as well as how it might be further adapted in the future. Dewey suggests students consider professional development as a developmental spiral, where the learning from one cycle stimulates the

beginning of another and so on, thereby providing them with a process that allows for the reconstruction of their knowledge and skills in light of new experiences.

For Donald Schon (1991), learning, reflection, and change make a remarkable contribution to students' understanding of the theory and practice of learning. His innovative thinking on notions such as "the learning society," "double-loop learning," and "reflection-in-action" can be said to have become part of the language of education. Students explore his work and some of the key themes that emerge out of it. This interest in improvisation and structure was mirrored in his academic writing, most notably in his exploration of professionals' ability to "think on their feet." On review, his achievements and focus center on three elements: learning systems (and learning societies and institutions); double-loop and organizational learning, and the relationship of reflection-in-action to professional activity.

This study is relevant to discourses that pertain beyond the South Africa case. The term "reflective thinking" is, no doubt, rather broadly used and defined. The word reflection means thinking itself, so the two words together reiterate one another. An overview of this study in this sense is found in the *South Africa Journal of Education*. Thinking reflectively demands relatively complex mental processes and requires the subject of a thought process to become its object. Thus, this study on reflectiveness implies the use of metacognitive skills (thinking about thinking), creative abilities, and taking a critical stance for student, teacher, educator, and general personnel, who wish to read for improving reflective thinking on daily life.

For this exact reason, researchers were interested in developing the reflective thinking instructional model of student teachers and in administering three steps of methodological research, namely the synthesis in texts, references, and reflective thinking where building up data related to the reflective thinking instructional model for student teachers' learning outcomes was the first step. The second step was to develop and synthesize various instructional methods, which have been recommended to support reflective thinking; yet, the nature of the underlying factors in these methods is unclear, such that exploratory factor analysis was used to determine the factors prompting reflective thinking for their thinking skills. The final step was to suggest that student teachers perceived three method clusters as supporting their reflection, namely reflective learning environments and reflective teaching methods, development of solving problem of students' satisfaction of their learning outcomes, and relationships between students' development of their thinking processes and their attitudes toward their professional teacher. How should the methodology of this research to develop the reflective thinking instructional model of student teachers?

Research Aim

To develop a methodology for a reflective thinking instructional model that supports reflective learning environments and reflective teaching methods to be amongst student teacher' outcomes.

Research Procedures

Using participatory action research to develop methodologies for a reflective thinking instructional model for the sample group, the following methodology was followed:

Sample

The 90 senior student teachers were selected from 4 educational programs, including 22 science students, 32 English students, 30 mathematics students, and six educational music students who were enrolled in the Educational College in Roi-Et Rajabhat University in the second semester in the academic year of 2011. The quality of the four lecturers were willing and participating of this research management, such as annual lecturer in higher education teaching level in Roi-Et Rajabhat University more than three years and are teaching the four student teacher groups, currently.

Accumulating Data

Using the following qualitative research instruments of observation, interview, group

discussion, and post learning, short note techniques were administered according to these procedural steps.

Step I: Synthesis Data

Using the literature reviews, texts, documents, thesis reports, and relative research to synthesize data for building up a model of the reflective thinking instructional model for teaching and learning in sample classes and developing the learning skills of student teachers to their reflective thinking tools and outcomes, thereafter scaffolding tools, such as interactive journals, question prompts, and concept maps, also prompted reflective thinking, namely the *Teaching Model Dummy*.

Step II: Framework Model

Researchers who prefer inquiry-oriented activities help students to reflect on a situation by asking thoughtful questions. The following is suggested by Joyce and Weil (2010), who present what is considered to be a classic model in the field; the researches covered the rationale and research on the major models of teaching and applied these models using scenarios and examples of instructional materials. These models have been shown to accelerate student learning and act as lifelong learning tools with a major psychological and philosophical framework, namely the *Framework Reflective Thinking Model for Teaching and Learning*.

Step III: Experimental Teaching

Normally, the *learning environment* might prompt students to construct meaning actively and reflectively. The *Framework Reflective Thinking Model for Teaching and Learning* was also used with an experimental group of 26 junior mathematics student teachers and junior students in Roi-Et Rajabhat University in the first semester, 2011. Providing learner-controlled instruction encourages students to make their own decisions regarding their learning progress so as to improve the *Reflective Thinking Model*.

Step IV: Checking Quality of Model

Collaborative learning, in which students explore their understandings and misunderstandings together, helps students think about what they already know, what they need to know, and how they would present and defend their own ideas in reaction to an instructional situation. Researchers presented this model for adoption, improvement, and advice by the related senior professional educators, who were able to check its validity according to the IOC (Index Of Concordance) for efficiency value. This step is called the *Improving Quality Reflective Thinking Model*

Step V: Propagandized Model

Complex learning activities requiring student teachers to learn from *A Quality Reflective Thinking Model* of information were adapted. Researchers taught this model to the four lecturers taking part in the participatory action research.

Step VI: Using Model for Teaching and Learning Processes

A further investigation of individual differences in student teacher reflective skills is also needed to discover which underlying factors are meaningful. Students may perceive the effectiveness of particular design factors differently according to their individual characteristics. A qualitative technique, utiking, observation, interview, group discussion, and post learning short note techniques was developed by the researchers and used because no pre-existing instrument was available to measure the perceived helpfulness of factors prompting reflective thinking. The survey instrument was sometimes composed of carefully targeted question items based on an extensive examination of the reflective-thinking literature, namely- *the Reflective Thinking Instructional Model*.

Step VII: Conclusion

    This study identified five design factors that a sample of student teachers perceived as helpful in prompting their reflective thinking. Researchers participated willingly to assist researchers apply the metacognitive model to self-explanation strategies on specific problems for students to understand the process of students' reflection.

Data Analysis

    In an effort to ensure content validity, the Education College, Roi-Et Rajabhat University, in the North-Eastern state of Thailand with expertise in the area of reflective thinking, was asked to review the questions and assesses the potential sample by the means of the recording field notes, data codes, and group dynamics, where interpreting and finding data may be explained and interpreted to develop the *Reflective Thinking Instructional Model* (Patton, 1990; Miles & Huberman, 1994).

Conclusion

    The development of the *Reflective Thinking Instructional Model* for supporting student teachers is an important aspect of departmental education, upholding the fundamental belief that all student teachers can learn. Researchers realize, however, that students have different learning preferences and learn at different rates. Therefore, the researchers agree with Joyce, Weil and Calhoun (2009) that teachers must not only be knowledgeable about the content they teach, but must also know and be committed to making decisions that involve the use of a variety of instructional strategies and approaches suited for particular purposes, and these must be appropriate to meet the diverse learning needs of students. This document argued here describes some of the most important models and techniques. The *Reflective Thinking Instructional Model* was composed of Instructional Strategies.

The Reflective Thinking Instructional Model

The five characteristics of the *Reflective Thinking Instructional Model* for supporting student teachers are as follows.

Characteristic I: Goals of Reflective Thinking Instructional Model

    The Reflective Thinking Instructional Model develops the ability of reflective thinking instructional processes of student teachers to their behaviors on reflective thinking abilities, such as the abilities of students' reflective thinking in learning environments and reflective teaching methods to develop the guidelines for the satisfaction of their believable decision empirical data, to select and have good presumptions to solve problems and development of their needs, and to create the conclusion of guideline data for analysis.

1. Step I: Relationship of Reflective Thinking Instructional Model: Study guides or advance organizers should be integrated into classroom materials to prompt students to reflect on their learning.
2. Step II: Social System Relationship of Reflective Thinking Instructional Model: Social learning environments should exist that prompt collaborative work with peers, teachers, and experts.
3. Step III: Reflective Learning Responses of Reflective Thinking Instructional Model: Questioning strategies should be used to prompt reflective thinking, specifically getting students to respond to why, how, and what specific decisions were described.
4. Step IV: Supporting System of Reflective Thinking Instructional Model. Learning experiences should be designed to include advice from teachers and co-learners. Classroom activities should be relevant to real-world situations and ought to provide integrated experiences. Classroom experiences should involve enjoyable, concrete, and physical learning activities whenever possible to ensure proper attention to the unique cognitive, affective, and psychomotor domain development of middle school students.

Characteristic III: Application Guideline of Reflective Thinking Instructional Model

The reflective thinking instructional model is applied to administer supporting learning and teaching steps, such as the natural satisfied and flexible course; learners responded to the prompt of reflective thinking from teachers' questions to *why, how,* and *what*. Social learning environments should exchange the prompt collaborative work with peers, teachers, and experts. Students should intervene and marry their attitudes to their ethics, and free their opinion expression for their reasons and empirical data believability. Students should do well on assignments and be able to write and discuss by the reflective thinking, and consider being able to specify their role- playing to their situation and learning experiences by the internal and the external classes.

Characteristic IV: Effects of Student Teachers on Reflective Thinking Instructional Model

Case I: Directly Effects. To develop a behavior of reflective thinking abilities; to be able to think reflectively within the social learning environments; to have the freedom for thinking expression by empirical data believability, to have the opportunity for presume and solving problems to develop their needs, and to create of guideline data to management.

Case II: Indirectly Effects. Student teachers ought to have self-confidence and social skills, to listen to individually divergent thinking, and to have a democratic system for considering guidelines of management. Thinking and decision foundational processes should situate the satisfaction in theory and follow as the right reason and context. Ethics of the thinking process should select self-thinking and self-performance to communicate through writing and speaking skills that should align with the discussion of role- playing and self-decision making.

Characteristic V: Assessing Guideline on Reflective Thinking Instructional Model

Teacher questions ought to be designed to prompt students to identify and clarify overall and subordinate problems; many opportunities ought to be sought to engage students in gathering information to look for possible causes and solutions; ideas and activity sheets ought to be made to help students evaluate the evidence they gather; questions ought to be asked that prompt students to consider alternatives and implications of their ideas**;** questions and activities ought to be introduced that prompt students to draw conclusions from the evidence they gathered and pose solutions; opportunities for students to choose and implement the best alternative**,** and to encourage students to monitor and reevaluate their results and findings throughout the entire unit.

Discussion

To develop the reflective thinking instructional model for student teachers' outcomes, using the processes provides a helpful framework for the teachers when integrating certain models of their teaching. Ultimately, the value of the model is derived from the extent to which the teachers are able to use it to meet their instructional goals effectively and efficiently. Using cognitive approaches, Joyce, Weil, and Calhoun's Information-Processing Teaching Model (2010) consists of techniques that are clearly cognitive in nature. They emphasize ways of enhancing students' innate desire to make sense of the world by acquiring and organizing information, solving problems, and developing concepts for conveying them. When administering this nature of model to four sample classes, it is interesting to reflect on students' responses, which can be seen to reflect Vygotsky's sociocultural theory of development, and the way in which it still applies to today's classrooms (Eggen & Kauchak, 2010). Vygotsky (1978) believed that learning developed as a direct result of social interaction (2010). This study has been found similar to Vygotsky's theory classrooms learning, such as collaborative learning, working in groups collaboratively, and more elaborately implementing collaborative learning. This model facilitated the social interaction, provided scaffolding and the opportunity of students' working with their others, learn from one another, often with the assistance of this model, to refine the skills necessary for internalizing new knowledge.

With a focus on developing reflective thinking and an instructional model for supporting learning outcomes of student teachers, Dewey (1933) suggests that reflective thinking is an active, persistent, and careful consideration of a belief or supposed form of knowledge, of the grounds that support that

knowledge, and of the further conclusions to which that knowledge leads. Students are aware of and control their learning by actively participating in reflective thinking, assessing what they know, what they need to know, and how they bridge that gap during learning situations.

Associated between the group of student classes and student development of the reflective thinking instructional model, it has been found that this situation was often associated with the work of Jerome Bruner (1966) and Jean Piaget (1960), where discovery learning is one method of inquiry-based instruction. This approach often involves structured or directed activities that require students to formulate and test "hypotheses through hands-on experience" (Schunk, 2012, 491). One popular discovery-based procedure of this study is the three-step learning cycle.

Derived from Piaget's developmental theory, lessons based on this instructional model typically begin with exploration that involves a concrete, hands-on activity related to the lesson objectives. This concrete experience leads to the concept invention step, during which students discover an important concept or relationship. The third stage of the learning cycle, concept extension, requires students to "directly apply the concept or skill learned during the invention activity" (Hartshorn, 2005, p.2).

In terms of student teachers' outcomes from their learning by means of the instructional model for the development of reflective thinking, this model involves a wide range of thinking skills leading toward desirable outcomes and reflective thinking, focusing on the process of making judgments about what has happened. However, reflective thinking is most important in prompting learning during complex problem-solving situations because it provides students with an opportunity to step back, to think about how they actually solve problems, and to consider how a particular set of problem solving strategies is appropriated for achieving (Moon, 1999).

The research on development of the reflective thinking instructional model for student teachers is not only just about how individuals think, but also about how they construct experiences more generally, including their thoughts, feelings, and social relations, but only this requires individuals to reach a level of social maturity that allows them to distance themselves from social pressures, to take different perspectives, to make independent judgments, and to take responsibility for their actions.

Suggestions

Academic Suggestion

To further this research to develop the reflective thinking instructional model of student teachers with the processes of the participatory action research, the research methodology was to design and develop a learning and teaching model. Group members will then be able to compare and contrast their colleagues' interpretations of the project experience with their own. Students may learn about the strengths and weaknesses of the group, as it is comprised of the competencies and assumptions of its individual participants. Considering this result, reflective thinking is an excellent tool for identifying positive and negative aspects of a group work experience. By spending time seriously contemplating the overall process, both during and after the project, it is possible for group members to learn from their experience and to work toward improving their group work skills for the future.

Policy Suggestion

It is important to prompt reflective thinking in educating institutional students to support them in their reflective thinking. During this time period, student experience intellectual, emotional, social, and physical development. If they begin to shape their own thought processes and are at an ideal time to begin developing thinking, learning, and metacognitive strategies, reflective thinking provides middle level students with the skills to mentally process learning experiences, to identify what they learned, to modify their understanding based on new information and experiences, and to transfer their learning to other situations. Scaffolding strategies should be incorporated into the learning environment to help students develop their ability to reflect on their own learning.

Normally, teachers face a myriad of daily choices: how to organize classrooms and curriculums, how to interpret students' behaviors, how to take individual learning process, and so forth. Many choices involve matters so routine that a teacher can make and implement decisions automatically. Teachers make

other decisions in the midst of an evolving situation after quickly reviewing the situation and recalling what has worked in similar scenarios. But teaching also involves complex choices about difficult problems that, if left unaddressed, often escalate. A different type of thinking is needed to address such choices. Tough choices call for teachers to engage in sophisticated reflection, including their own self-reflection. Expert teachers adjust their thinking to accommodate the level of reflection called for in a given situation. Their teaching is characterized by an intentional competence that enables them to identify and replicate best practices; refine serendipitous practice, and avoid inferior practice. Because of their ability to reflect, great teachers know not only *what* to do, but also why they do it. In South Africa, Constantino and De Lorenzo (2001), Danielson and McGreal (2000), Glickman (2002), and Lambert (2003) substantiate the role of reflection in teachers' professional growth. A disposition toward reflection—and a good sense of when the teacher needs to step back and think deeply—should be part of all teachers' repertoires. How can we nurture this habit of mind? A reflective thinking model in teaching is associated with teachers: "A teacher's day is full of appropriate opportunities for situational thinking."

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