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Procedia - Social and Behavioral Sciences 47 (2012) 739 – 744

**Procedia**  
Social and Behavioral Sciences

CY-ICER 2012

## Collaborative action research to promote reflective thinking among higher education students

Pongchawee Vaiyavutjamai <sup>a\*</sup>, Souwanit Charoenchai <sup>a</sup>, Sriwilai Ponmanee <sup>a</sup>  
Ampha Danpakdee <sup>a</sup>, Boonrawd Chotivachira <sup>a</sup>, Veena Warotamawit <sup>a</sup>  
Natcha Kamol <sup>a</sup>, Pongsak Pankaew <sup>a</sup>, Waraporn Sitthiwong <sup>a</sup>

<sup>a</sup>Faculty of Education, Chiang Mai University, 239 Huay Kaew Road, Chiang Mai 50200, Thailand,

### Abstract

Nine instructors, from across a range of departments, engaged in action research aimed at promoting reflective thinking among themselves and their graduate and undergraduate students. The study aimed to: (a) develop the instructors' own abilities to conduct collaborative research; (b) develop and implement activities promoting reflective thinking among students; and, (c) investigate effects of project activities on students' reflective thinking. Six instructional activities which contributed to effective reflective thinking were identified—creative tasks, seminar, learning resources, group processes, invited speakers, and problem posing and problem solving. Details are given of analyses which indicated that students' reflective thinking developed considerably.

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*Keywords:* Collaborative action research, reflective thinking, higher education, communities of practice

### 1. Introduction

Chiang Mai University (CMU) is a large regional university in Northern Thailand. In addition to standard academic courses, it offers interdisciplinary study programs aimed at encouraging students in different faculties to integrate knowledge. The University encourages lecturers to adopt an across-the-curriculum way of thinking which will prepare students to become independent and analytical thinkers. By this approach, CMU hopes to generate reflective and productive graduates who will lead Thailand into the future.

This paper describes an episode in which collaborative action research approaches were developed and applied by a team of CMU instructors who participated, on a voluntary basis, in an action research project. Members of the action research team (ART), who were from various disciplines, pooled their efforts and resources with the aim of identifying and solving relevant problems through developing and sharing rich instructional materials, and using collaborative teaching strategies. The aims of the study were: (a) to develop the instructors' ability to conduct collaborative research; (b) to develop and implement activities promoting reflective thinking among students; and (c) to investigate effects of project activities on students' reflective thinking.

\* Pongchawee Vaiyavutjamai Tel.: +66-53-94-1207

E-mail address: [edipvyvt@chiangmai.ac.th](mailto:edipvyvt@chiangmai.ac.th)

## 2. Review of literature

The origin of the concept of reflective practice in education is frequently ascribed to John Dewey (Peltier, Hay, & Drago 2006), who argued that learning takes time to weave its meanings among the threads of experience. Mezirow (1997) called this “transformative learning,” by which the learner brings hidden assumptions of prior knowledge into critical awareness. Fogarty (1994) used the term “metacognitive reflection,” with a focus on helping educators develop awareness not only of their own thought processes but also those of their students.

Various authors have proposed models with different levels of reflective thinking.

- Van (1977) presented a model of reflective thinking as a hierarchy with three levels: critical thinking, practical reflection and technical reflection.
- Mezirow (1997) viewed reflective thinking model in terms of a hierarchy of four levels of reflection—critical reflection, reflection, understanding, and habitual reflection.
- Henderson, Napan, and Monteiro (2004), in adapting a reflection scale from Bain, Ballantyne, Packer and Mills (1999), incorporated five levels, reporting, responding, relating, reasoning and reconstructing.
- Jacobs and Murray’s (2010) model had six levels: non-reflective action, technical-methodological reflection with respect to content, descriptive reflection with respect to content, dialogical reflection with respect to process, critical reflection and meta-reflection.

With respect to reflective practice, Song, Koszalka and Grabowski (2005) argued that three not-wholly-independent clusters linked to teaching methods can facilitate the development of reflective thinking: (a) reflective learning environments, (b) reflective teaching methods, and (c) reflective scaffolding tools.

*Reflective learning environments* can assist students to construct meaning actively and reflectively. Complex learning activities which require students to learn from multiple forms of information before responding tend to elicit active consideration of multiple inputs when students make judgments on how to proceed (Stepien & Pyke, 1997). The authenticity and real-life experiences associated with classroom learning activities can help students think reflectively by providing real situations and contextualized knowledge about new information that they are learning. *Reflective teaching methods* can assist the growth of reflective thinking in students. For example, teachers who prefer inquiry-oriented activities help students by asking thoughtful questions. Explanation-oriented teachers describe concepts to students, thereby prompting reflective thinking based on newly presented information (Moon, 1999). Teachers who use wait-time effectively can prompt students to think reflectively before they react (Rowe, 1974). Finally, *reflective scaffolding tools*—such as interactive journals, question prompts, and concept maps—can prompt reflective thinking (Griffith & Frieden, 2000). For example, Andrusyszyn and Daive (1997) noted that students who participated in interactive journal writing perceived the journal as a tool which helped them think about personal experiences, summarize their learning, and share their learning experiences with others.

## 3. Method

There are many definitions of the term “action research” in the literature. Thus, for example, Kember and Gow (1992) defined it as an attempt on the part of the researcher to improve his/her own teaching. One of the best-known approaches is Kemmis’s (1988) “Plan, Act, Observe, Reflect” (PAOR) operational cycle, which was designed for use in *collaborative* action research settings in which all members of the team of researchers have volunteered to participate (Bennett, Forman-Peek, & Higgins, 1996). Although widely accepted by school teachers, and regarded as an effective mechanism for personnel development (Kember & Gow, 1992; Sebatane, 1994), the PAOR cycle has not been used so much in university settings. In the study described in this paper the participants—nine university teachers and their students—decided to employ the PAOR cycle within a collaborative framework.

The participants in the study were nine CMU lecturers who taught within the Faculty of Education, and a total 126 students enrolled in nine classes in the first semester of 2010 academic year. Six of these were undergraduate classes, namely, “Learning Resources for Student” (13 students), “Teaching and Learning School Geometry” (11 students), “Thai Language and Cultural Wisdom” (16 students), “Teaching and Learning French” (8 students), “Business Education Curriculum Development” (22 students), and “Office Work Practice” (32 students). Three

were postgraduate classes: “Trends and Comparative Study of School Science Programs” (11 students), “Theories and Methods of Teaching Mathematics” (5 students), and “Seminar on Thai Studies” (8 students).

The research artifacts and instruments included lecturers’ post-teaching written reflections, notes made by students during classes, other student written work, comments on lessons, on “Teaching Observation” forms, and student focus-group discussion notes. Three core activities were devised. The first engaged students in searching, presenting, discussing and writing. During the second phase, instructors became reflective practitioners within their own classes. In the third phase, instructors made notes on events in their own classes, and in other team members’ classes. Students also made handwritten reflections on classes in personal journals. Artifacts—student-generated works during classes, and student journal entries—were examined. During the semester, students met and reflected on teaching and learning activities, and the quality of this reflective thinking was assessed by participating lecturers.

The team of researchers decided to follow the cyclical PAOR processes with the aim of improving each component through teaching. The research design involved the three stages, planning, teaching and synthesizing. At the **planning stage**, participating lecturers collectively defined the scope and sequence of reflective thinking. Three core instructional activities were devised: questioning, KWL, and an active/passive activity. These promoted student study skills with respect to searching, presentation, discussion and writing (Vaiyavutjamai et al, 2010). We created a three-level rubric for assessing students’ reflective thinking: *level 1* indicated technical reflection outside of context and without critical thinking; *level 2* corresponded to practical reflection with no context but some critical thinking; and *level 3* indicated critical thinking linked to cognitive, social, and moral contexts (Van, 1977).

At the **teaching stage**, participating lecturers taught their own classes, and ART members activated the four PAOR steps. A cycle was repeated if this was needed. Data were in the form of post-teaching reflections, notes made during observations, student written work, and student learning notes. Lecturers took turns in observing and making comments, with each lecturer observing one or two classes other than his/her own. Regular ART meetings were held, and at these instructors reflected on their teaching practices. Students, who had been organized into focus groups, discussed their own classes and made recommendations for enhancing students’ reflective thinking. They also self-evaluated their own reflective thinking. In addition, students were administered mid-term and final tests in their courses, and their responses permitted their subject-specific reflective thinking to be assessed.

At the **synthesizing stage**, participating lecturers jointly analyzed the strengths and weaknesses of their learning and teaching activities, the emphasis being on whether activities had enhanced reflective thinking among students.

#### 4. Research findings

The findings revealed that the lecturers developed their capacity to engage profitably in collaborative action research. They shared their learning experiences freely in an atmosphere of trust and teamwork, and became a supportive community of practice for team learning. They transformed tacit knowledge into explicit knowledge. Thus, for example, one lecturer observed that by working collaboratively she got a lot of ideas which she applied during the next action research cycle. Another reported that ART discussions benefited her teaching because through them she learned new activities which enhanced her students’ reflective thinking.”

All nine teachers who participated were convinced of the value of the action research procedures they followed: They felt that these helped them to create good lesson plans and evaluations. Furthermore, they recognized not only their own development with respect to reflective thinking and study skills, but also the same in their students.

Figure 1 shows the instructional model that the ART collaboratively developed for promoting undergraduate (UG) and graduate (G) student reflective thinking. The model utilized six forms of activities, creative tasks, seminar, learning resources, group processes, invited speakers, and problem posing and problem solving. Various core activities—KWL (involving questioning, and active and passive activity through four study skills), presentation, knowledge searching, discussion, and academic writing)—were developed by the ART.

Figure 2 shows midterm and final mean scores based on assessments of student reflective thinking for the nine courses. In each case, reflective thinking scoring was assessed on a 1 through 3 scale, with a mean score of 1 being regarded as “average.” In regard to the students’ self evaluations of their reflective thinking, Figure 3 shows “initial assessment’ and “final assessment’ mean scores for the nine courses.

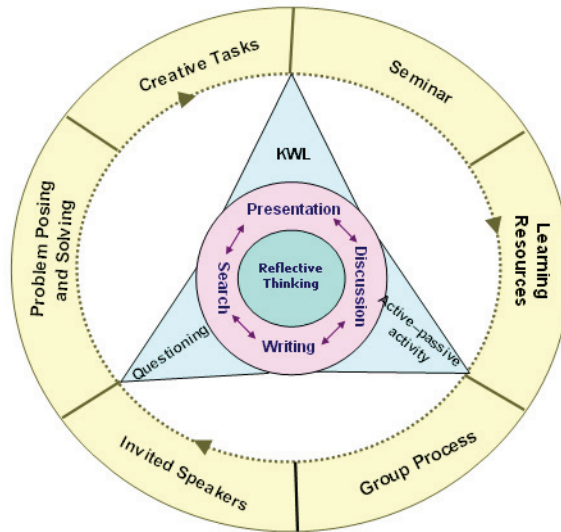


Figure 1. The instructional model developed for promoting student reflective thinking.

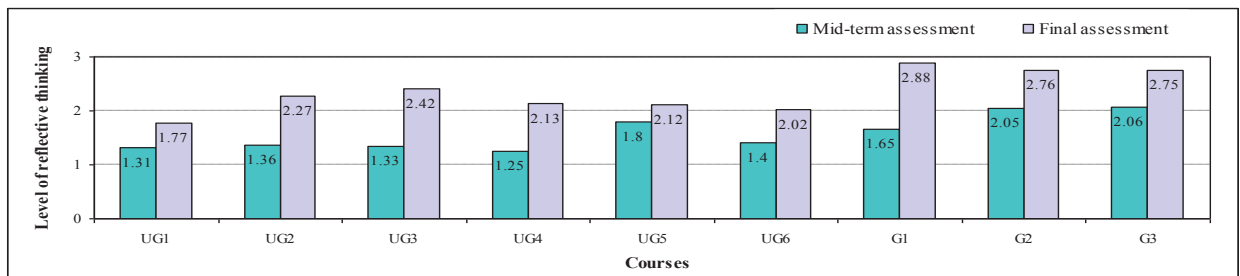


Figure 2. Summary showing (mid-term and final) mean scores of students' reflective thinking—aggregated for the nine courses.

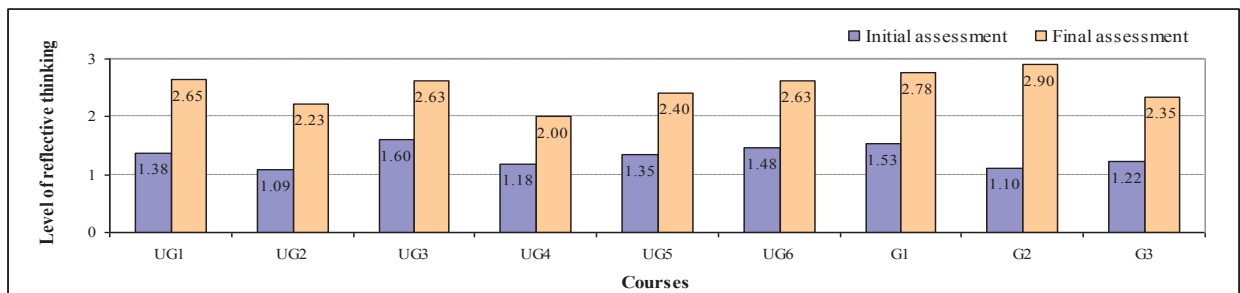


Figure 3. Summary showing (initial- and final-) mean scores of student self assessment of reflective thinking—aggregated for the nine courses.

### 5. Discussion and conclusions

The ART members established clear goals for their own professional development—they wanted to apply theory when teaching and to help their students do the same when they became full-time teachers. The processes of formally developing a research proposal and writing a final report were particularly beneficial because all team members became involved in reflecting on action research processes. Since each of the lecturers worked in the same

faculty of education, and was regarded as a specialist on teaching and learning issues, he or she felt confident in sharing ideas for promoting student reflective thinking. Six of the nine ART members had previously collaborated in an action-research project (Vaiyavutjamai et al, 2010), but for the project reported here there were three new ART members—who quickly engaged in, and enriched, the new collaborative action research program.

Three core activities—KWL, questioning, active/passive tasks—were helpful to all ART members. The reflective thinking model that was developed (see Figure 1) promoted high-order student thinking because it integrated the core activities and other activities that could be made relevant to the context of each subject. In particular, the reflective-thinking model (Figure 1) related to study skills, teaching presentation, knowledge searching, discussion, and academic writing—all of which are important for higher education students.

The reflective thinking model facilitated a synthesis from the triangulation of data. This synthesis emerged at the monthly ART meetings, at the student focus groups meetings, and in the students' journal writings. Most participating students developed their critical thinking skills—especially as a result of making metacognitive reflections. The action research model that was developed (see Figure 1) encapsulated this metacognitive aspect, and emphasized how reflective thinking was applied continuously throughout the semester. The self-evaluation aspect of the project helped both students and teachers improve their own reflective thinking, and the teachers' increasing use of scaffolding tools such as journal writing, question prompts, also contributed to their development (Griffith & Frieden, 2000). Undoubtedly, the synthesis resulting from collaborative learning through group process, discussion, reflection on good and flawed procedures, and thinking about how what they had learned already, or needed to learn, promoted, or might promote, student reflective thinking.

## Acknowledgement

This research was funded by Faculty of Education, Chiang Mai University, Thailand

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