An Application of the Principles of Action Research in Developing Teachers' Potentiality According to the National Education Act of 1999

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Abstract

This project consisted of five studies. The first study was using the principles of action research in developing teachers' skills in conducting classroom research**,** aimed to foster the skills and ability of participants in conducting classroom research to improve their teaching-learning activities. The second study was using the principles of action research in developing teachers' competency in facilitating the student-centered learning environment. The third study was using the principles of action research in developing the elementary school teachers' skills in constructing the instructional media. The fourth study was using the principles of action research in developing teachers' competency in authentic assessment. The fifth study was using the principles of action research in developing teachers' competency in constructing the school-based curriculum. This project was a training project based on the principles of action research. The participants were 7 lecturers and 2 graduate students of Faculty of Education and 27 primary school teachers from 8 schools in Khon Kaen. Mini-lecture, group activities, discussion, exercise, and presentation were used in this training program. Participant observation, interviews, tests, questionnaires, journal writings, photographs were employed for data collection. Formative and summative evaluations were used to investigate the effectiveness of the workshops. At the beginning and the end of a training session, a test was administered to assess their knowledge about some principles of classroom research, learning assessment, school based curriculum, and instructional media. A set of criterion score was predetermined for each test. Mentoring was used in enhancing and empowering the participants in conducting classroom research.

The results indicated that through this training project, the researchers and participants had developed self-esteem, self-respect, team building, sharing, collaborative work and a sense of belonging. Moreover, the participants had acquired skills in teaching and learning process especially constructing instructional media, cooperative learning and conducting classroom research to improve their teaching. In particular, the participants conducted research and were encouraged to present their papers at the Third Conference in Educational Research on September 11, 2005 at the Faculty of Education, Khon Kaen University, Khon Kaen, Thailand. 20 papers were presented in poster session.

Keywords: Action research**,** competency**,** student-centered**,** authentic assessment**,** curriculum

Introduction

According to the new Constitution, the National Education Act B.E 2542 (1999) has become effective since August 20, 1999. Learning reform is emphasized as a vital part of education reform, which called for the weaving and integrating of learning process: curriculum, learning activity and learning assessment for the development of the learners at their own pace and to the best of their potentiality as stated in Section 22 of the National Education Act B.E 2542 (1999) (Office of National Education Committee, 1999). The Act put its emphasis on the development of quality of human resources, life-long education for all, participation of all segments of society in education provision, and continuous development of the bodies of knowledge and learning processes. The teachers were considered to be an important agent in driving and gearing the education reform to be in a tract of success It is essential to emphasize knowledge, morality, learning process and a balance integration of subject matters, such as scientific and technological knowledge and skills (Office of National Education Committee, 1999). The teacher's role is very important as a change agent in learning reform and economic reform. Teachers are expected and assumed responsibilities to teach learners to be self-confident, to be able to work collaboratively, to solve a variety of problems, to communicate effectively and to be creative and critical in their thinking (Jeans and Sararat, 2002). Therefore, teachers have to improve their teaching behaviors, learning and vision for dealing with the effect of globalization towards changing of society whereas knowledge, information technology and communication have been dramatically changed. Teachers not only transfer knowledge but also encourage and promote learners to show their capabilities and potentiality. Teachers have to promote and install environmental awareness as well as skills in acquiring and constructing knowledge which are essential skills in life-long learning. These skills are necessary for the learners in the age of information technology and knowledge-based society. Learning reform is the vital part of all concern for an increasing of competitive potentiality of the country (Watanachai, 2001).

In the age of information technology, the learners have to learn to critique and to organize essential information. At present, learning is not only occurred in a classroom setting but learning resources are in everywhere. The teacher is not the only one who knows best in conveying knowledge but leaning and problem-solving should be collaborative work among teacher, learners and stakeholders. It is imperative that teachers find ways to improve their teaching because the recent teaching and learning methods were not enough to stimulate children's thinking and action. In order to motivate children to think and act more efficiently, teachers should develop effective learning processes by conducting classroom research (Office of National Education Committee, 1999). Thathong and Thathong (2002) found that there were 2,304 teachers (80.8 % of 2,852 teachers) in region 9 who have never conducted classroom research. Their knowledge about conducting research was at a medium level ($\overline{X}$ = 2.67, SD =1.13) and their needs of training on classroom research was at a high level ($\overline{X}$ = 4.08, SD = 0.94). Thathong, et.al. (2004) conducted a research on collaboration of teachers and educational researchers to improve the teaching learning activities on environmental education through the principle of action research found that teachers were lack of skills in conducting classroom research and needed mentors to give suggestions in conducting research. Mentoring process helped these teachers conduct their own research and encouraged them to present their research findings to public. Thathong et.al. (2004) also proposed a model of three phases in conducting a workshop on classroom research. It should provide content knowledge of research and teaching process in the first phase. The second phase should be provided during a period of conducting research and the third phase should be provide after collecting research data.

Classroom research is a systematic and reliable process to investigate knowledge and information in a context that needs to be improved and developed. In addition, both learners and teachers may benefit from research as part of the learning process and learn together from different type of teaching-learning media and other sources of knowledge (Office of National Education Committee, 1999)

Background of the study

This project consisted of 5 studies, The first study was using the principles of action research in developing teachers' skills in conducting classroom research**,** aimed to foster the skills and ability of participants in conducting classroom research to improve their teaching-learning activities. The second study was using the principles of action research in developing teachers' competency in facilitating the student-centered learning environment. The third study was using the principles of action research in developing the elementary school teachers' skills in constructing the instructional media. The fourth study was using the principles of action research in developing teachers' competency in authentic assessment. The fifth study was using the principles of action research in developing teachers' competency in constructing the school-based curriculum.

Purpose of the study

The purposes of this project were (1) to develop teachers' competency in a) conducting classroom, b) facilitating the student-centered learning environment; c) constructing instructional media, d) authentic assessment, and e) constructing school based curriculum; (2) to develop participation and collaboration between community and educational institutions; and (3) to create network of collaboration among the educational researchers and teachers.

METHOD

There were five workshop sessions conducted at the Faculty of Education.

1. A workshop on classroom research was conducted during 24-25 April, 26-27 June, 11 and 18 July 2004; and again during 18-19, 21-22 April, and 5-6 May 2005..
2. A workshop on facilitating the student-centered learning environment at the Faculty of Education during 30 April, and 1, 5-6 May 2004; and again during 26-27 March and 24-25 April 2005.
3. A workshop on construction of instructional media using principles of action research was conducted during 8-9 and 15-16 May 2004; and again in 2-3 April and 9-10 April 2005.
4. A workshop on authentic assessment was conducted during 22-23, 29 May, and 20 June 2004; and again during 23, 27-28 and 30 April 2005.
5. A workshop on constructing of school-based curriculum was conducted collaboratively at the Faculty of Education and Ban Tamadua School during 30 March, 8 ,27, 29 April, and 5, 7, 30 May 2004; and again during 12-13, 19-20, 29, 31 March and 16 May 2005.

Participants were required to work collaboratively using the principles of action research to improve their teaching. They were required to conduct two pieces of classroom research and integrate at least two subject matters in their teaching-learning activities. In addition, participants had to meet in a group for once a month to report their progress and ask for suggestions and advice in conducting their research. Mini-lecture will depend on needs

and problems in conducting research of participants. Figure 1 depicts the cycle of action research in conducting the project.

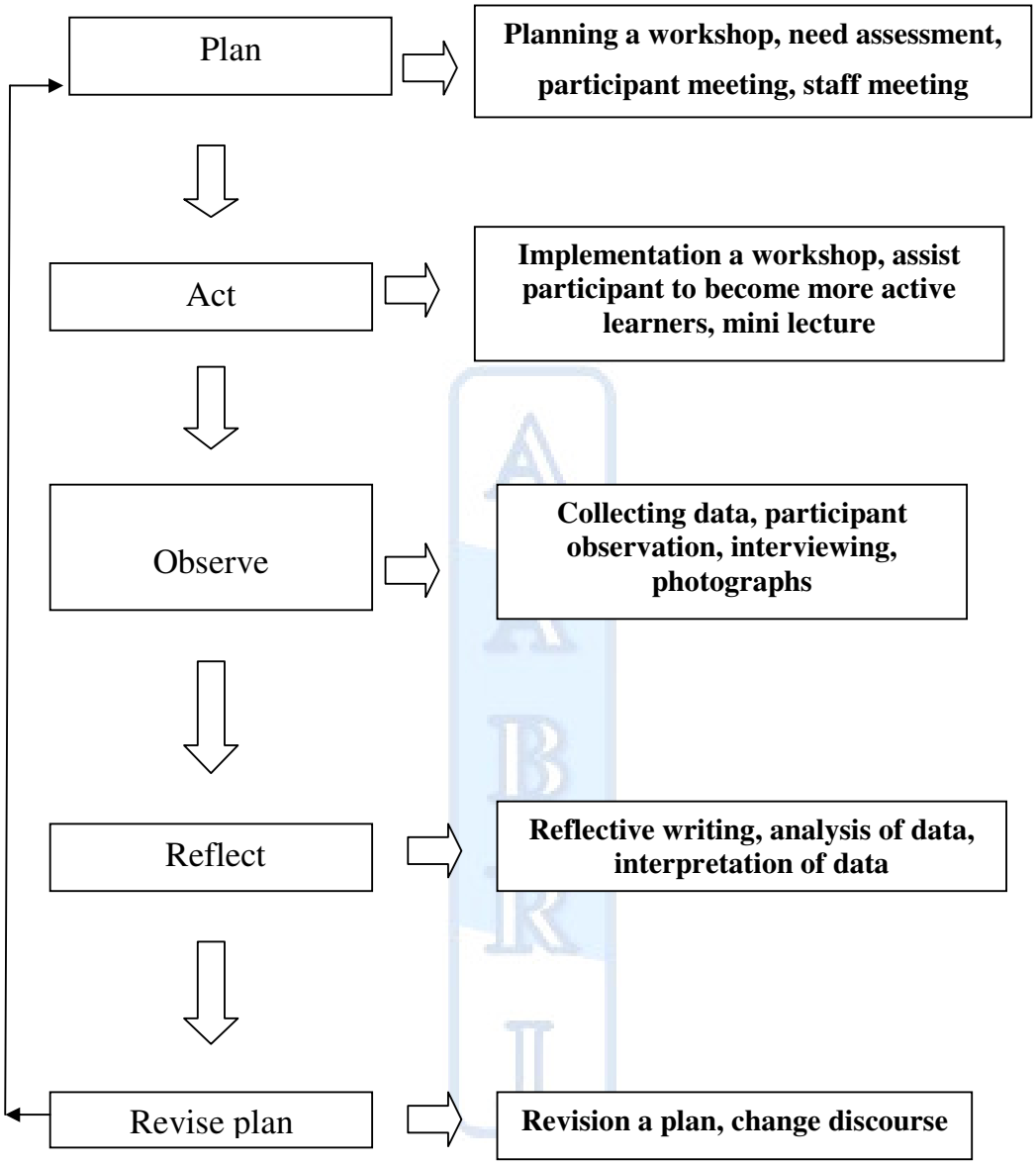

Figure 1. A cycle of action research (adapted from Kemmis & McTaggart.1992)

Participants

The participants were 7 lectures (2 males and 5 females) of the Faculty of Education, Khon Kaen University and 27 elementary school teachers from 8 schools in Khon Kaen Province. There were 8 male and 19 female teachers with an average age of 44 years. Their ages ranged from 28 to 56 years. All teachers completed B.Ed. degree. Two participant observers were graduate students in the Department of Educational Evaluation and Research Design, who observed and used semi-structured interviews with some participants to assist the researchers to reflect on the activities after completion and to validate these reflections.

Techniques for collecting data and monitoring the study

In monitoring the study, the researchers employed various techniques for collecting data such as interviewing, participant observations, journal writings, self-report, testing, reflective writings, taking photographs and using questionnaires.

Techniques for analyzing of data

Data were analyzed both quantitatively and qualitatively. In analyzing qualitative data, a process of interpretative approach was used to understand the essences of a phenomenon under investigation by focusing on meanings of events and phenomena and the social events (Jeans, 1997; Comstock, 1982; Newman, 2002). The triangulation technique was used to cross-reference a number of participants' perceptions of an event (Grundy and Kemmis, 1981; Elliot, 1991). Data were cross-checked by interviewing the participants using three different interviewers to determine the consistency and accuracy of the data. To ensure trustworthiness and authentic ideas or viewpoints, journal-writing reports were read and verified by participants.

During the ongoing workshops, the participants were asked to reflect their opinions. Both open-and closed-ended questionnaires were used at the end of the workshop. In study 1 and 2, the participants were asked to indicate their characteristics before and after the participation using a five-point rating scale questionnaire. In scoring the instrument, numerical values of one through five were also assigned to each level of opinions on their characteristics: lowest (1), low (2), medium (3), high (4), and highest (5). Means ($\overline{X}$) and standard deviations (SD) were computed. If assumptions of parametric statistics were not met, Wilcoxon signed ranks test was used to determine significant differences between the means of participants' characteristics both before and after the participation. If significant differences were found, it meant that their characteristics were positively changed.

At the end of a training session of study 1, 3-5, 30-item test was administered to assess participants' knowledge about conducting research and 20-item tests were administered to assess participants' knowledge about instructional material, authentic assessment, and curriculum based construction. A percentage of passing was 60 for all studies. At least 50% of participants should pass a test. Both open-and closed-ended questionnaires were used at the end of the participatory workshop to assess the effectiveness of the workshop in terms of the participants' satisfaction. The participants were asked to indicate their opinions after participating in the workshop using a five-point rating scale questionnaire. The steps of workshops were based on the ideas of action research

Planning step

The researchers discussed the contents, activities, and schedules of the workshop among lecturers. A tentative plan was established.

Acting step

In this step, the participants performed their activities according to the contents, processes and schedules. These activities were mainly mini-lecture, group discussions, justifications, and presentations.

Observing step

This step was an observation and data collection step. The researchers gathered the information by various methods of collecting data such as participant observations, interviewing, taking photographs, testing, self-reporting and writing reflections.

Reflecting step

This step was to analyze and interpret data and reflect on the first day by the researchers and an observer. The reflections of the first day activities were used to create and aid in re-planning (tentative) program for the next day.

Re-planning step

The action plans for the next days were adjusted as a result of the reflections and observations of the previous day's activities.

Results

Characteristics and Achievement outcomes

Before and after each of the workshops, the participants were asked to take the tests. A criterion score of passing for each study was 12 except for the study 1 which was 18. It was found that there were significant differences between means of pretest and posttest scores for all studies. For study 1,3 and 4, the percentage of participants passed a test which indicated statistically significant higher than 50% of participants ($\chi 2$ = 5.143, p=0.023; $\chi 2$ = 4.84, p=0.028, $\chi 2$ = 6.40, p=0.011) as illustrated in Table 1.

Table1
Passing proportion, mean, standard deviation and test statistic of pretest and posttest scores for each study

Study	Pretest		Posttest		t-value	sig	Passing	H_o:p = 0.50	
	$\overline{X}$	S.D	$\overline{X}$	S.D				χ^2	Sig
1	16.60	2.24	19.24	3.09	-4.823	.000	0.71	5.143	.023
3	9.94	2.10	12.59	2.48	-4.605	.000	0.63	1.815	.178
4	11.14	2.20	13.19	2.91	-3.462	.002	0.72	4.840	.028
5			13.70	1.42			0.90	6.400	.011

In addition, the participants were asked to indicate their knowledge and ability in conduction research and facilitating student-centered activities before and after participating in the workshops in order to assess more of the participants' outcomes by using 1 = lowest, 2 = low, 3 = medium, 4 = high, and 5 = highest. The results are indicated in Table 2, 3, 4, and 5.

Table 2
Comparison of participants' knowledge and understanding about conducting research before and after participating in the program using Wilcoxon Signed Ranks Test

	Before		After		Wilcoxon Z-value
	$\overline{X}$	SD	$\overline{X}$	SD	
1.Analysis of problem	1.63	0.65	3.54	0.66	-3.349*
2.Assessment of research topic	1.71	0.69	3.38	0.82	-4.097*
3.Identification of problem	1.96	0.75	3.63	0.65	-4.136*
4.Writing of research question	1.71	0.69	3.79	0.72	-4.276*
5.Writing of research proposal	1.63	0.71	3.75	0.79	-4.268*
6.Research design	1.43	0.51	3.32	0.71	-4.315*
7.Constructing of instruments	1.71	0.69	3.83	0.71	-4.346*
8.Collection of data	2.00	0.72	3.75	0.79	-4.262*
9.Analysis of data	1.67	0.70	3.58	0.78	-4.280*
10.Presentation of data	1.75	0.73	3.58	0.78	-4.284*
11.Interpretation of data	1.54	0.72	3.71	0.69	-4.263*
12.Report writing	1.54	0.77	3.71	0.62	-4.262*
Total	1.69	0.70	3.63	0.73	

Table 3
Comparison of participants' ability in conducting research before and after participating in the program using Wilcoxon Signed Ranks Test

	Before		After		Wilcoxon Z-value
	$\overline{X}$	SD	$\overline{X}$	SD	
1.Analysis of problem	1.54	0.72	3.42	0.65	-4.370*
2.Assessment of research topic	1.54	0.66	3.42	0.65	-4.423*
3.Identification of problem	1.88	0.80	3.79	0.66	-4.356*
4.Writing of research question	1.63	0.77	3.71	0.75	-4.360*
5.Writing of research proposal	1.67	0.82	3.71	0.62	-4.283*
6.Research design	1.46	0.60	3.28	0.51	-4.225*
7.Constructing of instruments	1.75	0.68	3.71	0.69	-4.398*
8.Collection of data	1.92	0.72	3.67	0.71	-4.373*
9. Analysis of data	1.58	0.72	3.54	0.66	-4.240*
10.Presentation of data	1.67	0.70	3.46	0.66	-4.285*
11. Interpretation of data	1.50	0.72	3.63	0.72	-4.276*
12. Report writing	1.58	0.78	3.63	0.58	-4.362*
Total	1.64	0. 73	3.58	0. 60	

The results in Table 2 and 3 illustrated that the desirable characteristics of research were fostered and enhanced in participants after participated in the workshop on classroom research. All of knowledge and ability in conducting research were shifted up more than 1.68 on the rating scale, which indicated significant differences at the .05 level. However, all of the participants' characteristics about research were improved.

The results are illustrated in Table 4, which indicated that participants' knowledge and understanding about student-centered activities were fostered and enhanced in participants after the participation. All of knowledge and understanding were shifted up 1.3 to 2.39 on the rating scale, which indicated significant differences at the .05 level. There were three categories that shifted 2 levels on the rating scale. They were teaching-learning activities (Integrating within substance), writing infusion instruction activities, and writing parallel instruction activities

Table 4
Comparison of participants' knowledge and understanding about student-centered activities before and after participating in the program using Wilcoxon Signed Ranks Test

	Before		After		Wilcoxon Z-value
	$\overline{X}$	SD	$\overline{X}$	SD	
1. providing student-centered activities	2.69	0.62	4.00	0.40	-4.660*
2. writing student-centered lesson plan	2.38	0.75	3.92	0.63	-4.594*
3. using community resource in learning activities	2.46	0.86	4.23	0.82	-4.550*
4. teaching-learning activities (Integrating within substance)	2.08	0.84	4.08	0.63	-4.527
5. teaching-learning activities (Integrating between substance)	1.92	0.84	3.85	0.88	-4.335*
6. writing infusion instruction activities	2.08	0.93	4.31	0.74	-4.520*
7 writing parallel instruction activities	1.77	0.71	4.15	0.67	-4.496*
8. constructing learning activities	2.31	0.74	4.08	0.483	-4.543*
9. constructing instructional media using local materials	2.31	0.62	3.69	0.74	-4.261*
10.providing project-based activities	2.15	0.67	3.69	0.2	-4.597*
Total	2.22	0.76	4.00	0.65	

The results are illustrated in Table 5, which indicated that the participants' ability in providing student-centered activities were fostered and enhanced in participants after the participation. All of abilities were shifted up 1.38 to 2.54 on the rating scale, which indicated significant differences at the .05 level. There were four abilities that shifted 2 levels on the rating scale. They were teaching-learning activities (Integrating within substance), teaching-learning activities (Integrating between substances), writing infusion instruction activities and writing parallel instruction activities.

Table 5
Comparison of participants' ability in providing student-centered activities and after before participating in the program using Wilcoxon Signed Ranks Test

	Before		After		Wilcoxon Z- value
	$\overline{X}$	SD	$\overline{X}$	SD	
1. providing student-centered activities	2.58	0.58	3.96	0.34	-4.617*
2.writing student-centered lesson plan	2.27	0.67	3.92	0.63	-4.556*
3. using community resource in learning activities	2.31	0.84	4.23	0.82	-4.533*
4. teaching-learning activities (Integrating within substance)	1.92	0.84	4.08	0.63	-4.512*
5. teaching-learning activities (Integrating between substance)	1.81	0.85	3.92	0.89	-4.420*
6. writing infusion instruction activities	1.88	0.86	4.31	0.74	-4.509*
7. writing parallel instruction activities	1.65	0.69	4.19	0.69	-4.493*
8. constructing learning activities	2.27	0.72	4.04	0.45	-4.563*
9. constructing instructional media using local materials	2.23	0.59	3.73	0.72	-4.388*
10.providing project-based activities	2.08	0.63	3.69	0.62	-4.617*
Total	2.10	0.74	4.00	0.67	

Satisfaction outcomes

Results of Study 1 and 2 were illustrated in Table 6. The participants indicated their opinions and satisfactions towards both programs at high levels ($\overline{X}$ = 4.26, SD = 0.61; $\overline{X}$ = 3.91, SD = 0.64). The highest levels of opinions were congruence of content and activities ($\overline{X}$ =4.90, SD = 0.31), climate in a meeting room ($\overline{X}$ =4.59, SD = 0.50), and level of gained knowledge ($\overline{X}$ = 4.59, SD = 0.57) for study 1; whereas capability of instructors ($\overline{X}$ = 4.64, SD = 0.49) was indicated the highest level for study 2

Table 6
The means and standard deviations of participants' opinions towards activities used in the workshop of Study 1 and Study 2

Topics	Study 1		Study 2	
	$\overline{X}$	SD	$\overline{X}$	SD
1. Clarity of content	4.14	0.52	3.88	0. 60
2. An appropriateness of using media	4.24	0.64	3.48	0.71
3. Climate in a meeting room	4.59	0.50	4.24	0. 60
4. An appropriateness of materials	4.31	0.54	3.44	0.65
5. Sequence of presentation	4.28	0.53	3.76	0.72
6. Clarity of presentation	4.14	0.64	4.00	0.76
7. Interesting of presentation	4.07	0.70	3.92	0.70
8. An opportunity to ask questions	4.00	0.67	3.96	0.74
9. Easiness to understand	4.32	0.72	4.12	0.78
10. Level of satisfied expectation	4.00	0.76	3.60	0.65
11. Participation in session activities	4.28	0.59	3.63	0.71
12. Level of gained knowledge	4.31	0.60	3.92	0.49
13. An appropriateness of activities	4.59	0.57	3.76	0. 60
14. Interesting of activities	4.07	0.75	4.00	0.50
15. Usefulness of activities	4.17	0.54	4.08	0.41
16. An appropriateness of time allocation	4.28	0.59	4.44	0.58
17. Congruence of content and activities	4.31	0.60	3.40	0.82
18. An appropriateness of presentation	4.90	0.31	3.92	0.49
19. Easy to participate	4.00	0.54	3.96	0.54
20. Capability of instructor	4.14	0.69	4.64	0.49
total	4. 26	0. 61	3.91	0.64

Results of Study 3 and 4 were illustrated in Table 7. The participants indicated their opinions and satisfactions towards both programs at high levels ($\overline{X}$ = 4.17, SD = 0.61; $\overline{X}$ = 4.23, SD = 0.58). The highest levels of opinions were climate in a meeting room ($\overline{X}$ = 4.54, SD = 0.51) for study 4, capability of instructors ($\overline{X}$ = 4.58, SD = 0.51; $\overline{X}$ = 4.75, SD = 0.44) and usefulness of activities ($\overline{X}$ = 4.52, SD = 0.51; $\overline{X}$ = 4.63, SD = 0.50) for both study 3 and study 4.

Table 7
The means and standard deviations of participants' opinions towards activities used in the workshop of Study 3 and Study 4

Topics	Study 3		Study 4	
	$\overline{X}$	SD	$\overline{X}$	SD
1. Clarity of content	4.00	0.59	4.12	0.45
2. An appropriateness of using media	4.13	0.61	4.25	0.68
3. Climate in a meeting room	4.42	0.65	4.54	0.51
4. An appropriateness of materials	3.79	0.78	4.00	0.51
5. Sequence of presentation	4.21	0.51	4.21	0.42
6. Clarity of presentation	4.25	0.53	4.25	0.53
7. Interesting of presentation	4.38	0.50	4.29	0.62
8. An opportunity to ask questions	4.22	0.60	4.25	0.68
9. Easiness to understand	4.21	0.72	4.33	0.76
10. Level of satisfied expectation	4.08	0.41	4.04	0.69
11.Participation in session activities	3.88	0.74	3.92	0.78
12. Level of gained knowledge	4.29	0.81	4.21	0.66
13. An appropriateness of activities	4.00	0.51	3.96	0.55
14. Interesting of activities	4.12	0.54	4.29	0.46
15. Usefulness of activities	4.25	0.53	4.29	0.55
16.An appropriateness of time allocation	4.52	0.51	4.63	0.50
17.Congruence of content and activities	3.67	0.82	4.00	0.66
18.An appropriateness of presentation	4.21	0.51	4.17	0.48
19. Easy to participate	4.25	0.53	4.13	0.54
20.Capability of instructor	4.58	0.50	4.75	0.44
total	4.17	0.61	4.23	0.58

Results of Study 5 illustrated in Table 8. The participants indicated their opinions and satisfactions towards activities in a workshop at high level ($\overline{X}$ = 4.40, SD = 0.56). The four ranks of highest levels of opinions were capability of instructors ($\overline{X}$ = 5.00, SD = .000), usefulness of activities ($\overline{X}$ = 4.91, SD = 0.30), participation in session activities ($\overline{X}$ = 4.82, SD = 0.41), and climate in a meeting room ($\overline{X}$ = 4.82, SD = 0.41).

Table 8
The means and standard deviations of participants' opinions towards activities used in the workshop of study 5

Topics	$\overline{X}$	SD
1. Clarity of content	4.09	0.83
2. An appropriateness of using media	4.10	0.74
3. Climate in a meeting room	4.82	0.41
4. An appropriateness of materials	4.27	0.47
5. Sequence of presentation	4.64	0.51
6. Clarity of presentation	4.18	0.75
7. Interesting of presentation	4.36	0.67
8. An opportunity to ask questions	4.27	0.47
9. Easiness to understand	4.55	0.69
10. Level of satisfied expectation	4.55	0.52
11.Participation in session activities	4.20	0.42
12. Level of gained knowledge	4.82	0.41
13. An appropriateness of activities	4.18	0.60
14. Interesting of activities	4.18	0.41
15. Usefulness of activities	4.55	0.52
16.An appropriateness of time allocation	4.91	0.30
17.Congruence of content and activities	3.45	0.82
18.An appropriateness of presentation	4.50	0.53
19. Easy to participate	4.27	0.47
20.Capability of instructor	5.00	0.00
total	4.40	0.56

Reflections

At the end of each phase of the participatory workshop, all participants were asked to anonymously write their reflections. Every participant said that the workshop was worthwhile and necessary. They appreciated the friendly and democratic atmosphere of the workshop; the opportunity to develop and acquire skills in conducting classroom research on teaching strategies and instructional media; the opportunity to develop and enhance skills in collaborative work and constructing instructional materials; and some of opportunity to participate in the workshop. They claimed that they also had the opportunity to develop skills in interpersonal relations, collaborative work, and problem-solving. They also developed their ability to discuss, report, speak, and respond to feedback. Some participants said that they were invited to the nearby schools to talk about classroom research and infusion instruction strategies.

> My wife and I participated in this project. We were invited to talk in a session how to conduct research for academic promotion to teachers in our sector. We also talked about how to integrate subject matters in teaching to the nearby school teachers (Interviewed participants during a follow up study)

Thank you for this project. We are very proud of our own school-based curriculum. We have known a process of constructing curriculum. Thank you for assistance and hard working of all members of our schools.

(Extracted from a participant's journal)

I am very proud of our school-based curriculum. Thank you for all dedications and hard work of teachers. It was shown on the showcase along with our research works at the open day of our region education 4.

(Extracted from interviewing a participant)

We were invited to speak how to constructed school-based curriculum for a school nearby our school.

(Extracted from interviewing two participants)

I was very glad to make a right decision to participate in this project. I have gained knowledge as well as weight and enjoyed practicing collaborative work. I was very happy to be a member of this group. I motivated myself not to skip any activities provided by this workshop

(Extracted from a participant's journal)

I have gained a lot of experience without paying for participating in the workshop. I really liked materials and enjoyed lunch and coffee break. I have learned to write a proposal to conduct a research.

(Extracted from a participant's journal)

I was very impressed in knowledge transmission and friendly atmosphere. Ajarn Theerachai was very keen in explaining ideas in a simple way but there were too much contents in some days.

(Interviewed a participant)

The climate in a meeting room was very friendly. I wish this kind of activities should be provided for other teachers in Khon Kaen. I think that I could write an effective lesson plan using some knowledge gained from this workshop.

(Extracted from a participant's journal)

I have learned to use different kinds of paper folding and group activities for dividing groups of students

(Interviewed a participant)

The model of providing workshop should be like this because teachers should know some theories and then guidelines for applying. The researchers in this project acted like mentors for every step of conducting research.

(Extracted from a participant's journal).

We enjoyed delicious lunch so we had sleepy eyes therefore we had to move ourselves before the session began. We really enjoyed group process activities. We acted like a child and participated with joy

(Extracted from a participant's journal).

I have made a right decision to participate in this project. I have gained knowledge and enjoyed practicing collaborative work. I like activities and applied some activities to my students.

(Extracted from a participant's journal)

I would like to express my feeling that I am very happy to have an opportunity to join a group process activity. I have gained knowledge and enjoyed practicing collaborative work.

(Extracted from a participant's journal)

> I used to participate in training on classroom research but I still can't conduct a classroom research. I see the light at the end of the tunnel. I am very proud of myself to conduct a survey research. It is my first research report.
>
> (Extracted from a participant's journal)

Conclusions

The results of this research showed the effectiveness of the workshops in terms of achievement outcomes and satisfaction outcomes of participants. These results also showed that there were improvement and change of participants' knowledge and ability in conducting research and facilitating student-centered activities after participating in this project. Some activities about integration instruction were appeared to be their first experience. They had more chances to express their opinions to the group. They also had an opportunity to learn communication techniques and teamwork skills from working as a group. Many participants thought that they could implement these skills and experiences in their teaching careers. The results also indicated that through this training project, the researchers and participants had developed self-esteem, self-respect, team building, sharing, collaborative work, a sense of belonging, and skills in problem-solving. Networking was established because they have to work collaboratively. The participants were very satisfied with workshop and research activities. They have gained a lot about working as a group. They knew how to work with other people and knew themselves better. They have also developed skills in conducting research on teaching strategies and instructional media to improve their teaching-learning activities. Moreover, the participants had acquired skills in teaching and learning process especially constructing instructional media, cooperative learning and conducting classroom research to improve their teaching. In addition, the benefit of this training project was not limited to personal development of teachers but also their students as student-centered.

In particular, the participants conducted research and were encouraged to present their papers at the Third Conference in Educational Research on September 11, 2005 at the Faculty of Education. 20 papers were presented in poster session.

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