The Effects of Teachers' Teaching and Learning Management by Integrating CCR Concepts on the Teaching Behavior Change in Schools under the Office of the Basic Education Commission

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Abstract

The goal of this study was to examine the effects of teaching and learning management practices used by teachers in schools run by the Office of the Basic Education Commission by using CCR ideas. Teachers of mathematics who work in classrooms run by Secondary Educational Service Area Office 40, Phetchabun Province, made up the population. Purposive sampling was used to pick 127 individuals overall. The study tools included an observation form for teacher training development, a teacher supervision record, a supervision report form for teacher development project by integrating CCR principles, a teacher's teaching record, and a teacher satisfaction assessment form. Utilizing the mean and standard deviation, the quantitative data was examined, content analysis was used to analyze the qualitative data.

The study's findings indicated that teachers' teaching behaviors changed as a consequence of the development of mathematics instructors in line with the workshop titled "The teacher development by adopting CCR integration." By using CCR ideas in schools, start by being able to develop learning management plans that utilize CCR integration for setting up math learning activities. According to the findings of the project's educational oversight of the math teachers who took part, the average results of the improvement of teaching and learning management increased for each individual item as well as overall, and the teachers who underwent development gave the workshop titled "the teacher development by CCR concepts integration" the highest level of overall satisfaction. Additionally, the qualitative data showed that teachers had altered their pedagogical practices. The instructors successfully managed their students' learning in the classroom by utilizing the CCR integration and the information and understanding they gained from the training in terms of the learning activity process. Through the use of a variety of activities, including singing, playing games, searching for information, using questions, solo and group activities, and presentations in front of the class, the teachers were found to have altered their teaching styles in accordance with the concepts of contemplative education, coaching and mentoring, and research-based learning. These gave pupils the chance to learn, comprehend, practice, and communicate their ideas, the usage of a range of instructional material by teachers to encourage and promote learning among pupils in the classroom was also noted.

Keywords: Teaching and learning management, Integrating, The CCR concept

Introduction

The core curriculum of basic education from 2008 (Revised 2017) states that one of the three learning disciplines, mathematics, should prioritize students' learning by developing the necessary content and learning standards and indicators. The third subject in conventional education is statistics and probability, which is a mathematical aptitude and approach to problem-solving (Thongtavee, 2015). Thus, the main goal of managing mathematics studies is to have the ability to respond to a wide range of mathematical issues (Wasi, 2017). Thus, one of the five skills that students should master and practice is the capacity to solve math problems, and whereas fostering the growth of these talents in children will result in more diverse thinking, excitement, and less discouragement. Students should feel confident and competent in problem-solving both inside and outside of the classroom since it is a high-level skill that they can utilize to handle challenges in their everyday life. (Reungdam, 2018)

It has been found that math education in grades 12 (Matthayom 6) has not been as successful as it might be, despite the importance of managing math instruction in schools. Which the teaching and learning management of the mathematics learning subject group, which the Secondary Educational Service Area Office 40 of Phetchabun Province. It is clear from the National Educational Test (O-NET) results that mathematics has the lowest average score, at 37.48, compared to science, which has the highest average score at 39.93, English, which has the lowest average score at 39.24, and Thai, which has the highest average score at 55.90. When results were broken down by region, it was discovered that Phetchabun Province had average mathematics scores for the academic years 2019 and 2020 that were both below than the aim outlined in the educational development plan at 26.30% and 30.04%, respectively, it was found that the mathematics learning achievement was still far below the necessary level when the third learning standard on statistics and probability was investigated. (Panyapinitnukul, 2015)

There are a number of ways to address issues that lower learning achievement, for instance, the development of teaching methods for teachers is one of the solutions to the issue; the teacher improves the method to suit the content and the age of the students, and by involving students in learning and teaching activities, instructors may foster an engaging learning environment that keeps students interested in mathematics and motivated to study, in addition to having a p (Mckinney, 2008). However, as each student has a different learning style, successful teaching should take into account these differences, the finest educational strategies are those that cater to the unique requirements of each student, according to teachers. (Methawut, 2015).

One of the innovative teaching professions that can be used to minimize student inequalities is learning activities that integrate CCR concepts, which is a sort of activity made up of three principles (Ampanon, 2018; 2019) the notion of intellectual education, among others Contemplative education is instruction that places a strong emphasis on the student's innate ability to develop their mind. Studying cheerfully improves academic performance and includes mental exercise, meditation, and improved physical and mental health. The oneness

of all things can be explained to increase awareness of the value of things without prejudice, to foster love, compassion, and community consciousness, and to help build an intellectually basic society (Panich, 2018). The principle of mentoring (coaching) comprises leading and directing, as well as learning alongside a person or group of people, with the purpose of enabling individuals to solve their own issues while putting an emphasis on sustainable practices (Sinlarat, 2016). Include research-based education to discover solutions or acquire new knowledge. Teaching and learning processes are arranged in a method known as research-based learning, to find solutions within the field of science related to the study topic (Mezirow, 2003).

Because of this, the researcher is interested in using the five-step CCR idea integration model that was created by the researcher. These are (1) preparation step, (2) knowledge acquisition stage, (3) linking to action step, (4) reflection and evaluation step, and (5) learning conclusion step, to research the outcomes of teaching and learning management of instructors using the CCR concept integration model with the goal of altering teaching behavior at institutions of higher learning under the office of the basic education commission (Buzan, 1991). The researcher is an administrator and an instructor under the Faculty of Education, Phetchabun Rajabhat University which is responsible for determining the main policy for producing and developing quality teachers. A research project and workshop on developing teachers using the integration of CCR concepts was established in order to give teachers the knowledge and understanding of the process to assist teaching-learning by applying CCR ideas, as well as to be applied in the workplace study. In addition to serving as a model for teaching and learning in other subjects and as a means of addressing issues with national educational test results, it also helps students develop diversified and sustainable learning, lower barriers, promote the whole person, and develop their ability to think critically and solve mathematical problems (O-NET).

Research Objectives

To study of the results of learning management and teaching behavior modification of teachers in schools under the Office of the Basic Education Commission (OBEC) by integrating CCR concepts.

Methodology

By collaborating on teacher development to send teachers to this training with Secondary Educational Service Area Office 40 and Phetchabun Provincial Educational Institutions, 127 math instructors from schools affiliated with Secondary Educational Service Area Office 40 Phetchabun Province were carefully selected for the development population.

Research tools include; forms for teacher development training observation records, teacher supervision records, teacher development project supervision reports using the CCR concept, teacher teaching result records, and teacher satisfaction surveys are all available online. The researchers created great teachers in the northern region using the equipment,

methods, and manufacturing processes from the research and development project, there are audits of the tools' efficacy, including IOC compliance audits and reliability audits.

Data collection; it is divided into 3 phases as follows:

Phase 1: In CCR integration activities, understanding and use of the observational participatory behavior model is necessary. During the teacher development training session, data from the workshop were collected and divided into the following three models; the first training consisted of 62 persons, the second training consisted of 27, and the third training consisted of 38 people.

Phase 2: Teachers will develop their abilities and advance in teaching mathematics by using the teacher's teaching record form and the supervision record form. Teachers will either post the findings online or ask you to email them your pictures as an attachment. Consider a learning management approach that includes CCR concepts, learner innovations, the formation of a distinct line group named CCR, and collaboration with networks and educational institutions that are participating in the project at least twice in a total of 24 locations as an example.

Phase 3: Utilizing the student assessment form, a survey of mathematics instructors was conducted to ascertain their satisfaction with the curriculum following the three training sessions.

Statistics in Analysis; data analysis while statistical analysis, such as mean and standard deviation, is used for quantitative data, content analysis is used for qualitative data.

Data Analysis; the researcher conducted the data analysis as follows:

1. Data were acquired through the study of knowledge on the utilization of CCR integration activities using an observational participatory behavior model and a workshop during the teacher development training session, which was separated into 3 models. Specifically, the first training at the Faculty of Education Phetchabun Rajabhat University (28 February–11 March 2021), the second training (18 March–1 April 2021), and the third training (25 April–15 May 2021). Objectives (1) to inform math instructors about the project's history and significance, as well as the collaboration between the Faculty of Education, the Educational Service Area Office, and the educational institutions that send teachers to participate in the project, 2) to train instructors how to integrate principles from cognitive education, the mentorship program, and the CCR, a research-based learning management system with five activities. These are (1) preparation stage, (2) knowledge acquisition stage, (3) linking to action step, (4) reflection and evaluation step, and (5) learning conclusion step. There were 127 instructors present, and the presenters shared a wide range of information and the study's directors to take part. The observations show that instructors shared knowledge about curriculum analysis, learning management system design, and developing learning management plans. They also understood the importance of teacher development projects, including CCR ideas, and recognized the need for these projects, and they helped one another improve mathematics teaching and learning as well as set up teaching supervision from lecturers through the integration of CCR ideas.

2. The examination of phase 2 supervision data on teachers' skill and growth in teaching mathematics yielded the educational outcomes reported in table 1.

Table 1 Comparison results from the supervision of teaching and learning management of mathematics teachers

No.	Teaching and learning management of mathematics teachers using the integration of CCR concepts	Training Phase 1 $\bar{X}$	S.D.	performance level	Training Phase 2 $\bar{X}$	S.D.	Performance level	difference	development results
1	A learning management plan using Integrate CCR concepts.	3.88	0.91	a lot	4.76	0.05	most	+0.88	more
2	Results of the learning process, knowledge plan, and learning management are in line with the integration of CCR ideas.	4.03	0.81	a lot	4.69	0.57	most	+0.66	more
3	By incorporating CCR ideas, the process of planning learning events puts a strong emphasis on participants and learners.	3.94	0.81	a lot	4.80	0.51	most	+0.86	more
4	Structured exercises that use the five-step CCR idea are used to help students improve their ability to process information and solve mathematical problems.	3.83	0.40	a lot	4.65	0.68	most	+0.82	more
5	Using the right learning management tools and innovating learning management by incorporating CCR ideas.	4.05	0.84	a lot	4.68	0.64	most	+0.63	more
6	Timing each step and the overall learning activity properly.	4.00	0.82	a lot	4.83	0.54	most	+0.83	more
7	By incorporating CCR ideas and learner competencies, measurement and evaluation are congruent with the learning management system.	3.89	0.85	a lot	4.66	0.68	most	+0.77	more
8	Monitor and follow up with students, provide direction, help with reprimands in accordance with the mentoring system, document student progress following instruction, and present results for improvement.	3.78	0.78	a lot	4.74	0.56	most	+0.96	more
9	The project's development outcomes should be given to the supervisor in accordance with the numerous papers that should be employed in the project.	4.06	0.83	a lot	4.75	0.62	most	+0.69	more
	average total	**3.94**	**0.49**	**a lot**	**4.73**	**0.36**	**most**	**+0.79**	**more**

From Table 1: It was found that from the first supervision, the teacher's results in teaching mathematics, overall were at a high level ($\bar{X}$ = 3.94, S.D. = .49) and when considering the mean of each item, it was found that all items were at a high level, with the item with the highest teaching average being development results according to various documents that should be used in the project, and presented to the supervisor ($\bar{X}$ = 4.06, S.D. = .83), followed by the use of appropriate learning management media. and innovation in learning management by integrating CCR concepts ($\bar{X}$ = 4.05, S.D. = .84), respectively. As for the item, the average teaching management was the least. Supervise and follow up students, perform guidance and help correct according to the mentoring system, record after teaching. and use the results to modify and develop ($\bar{X}$ = 3.78, S.D. = .78). From the second supervision, teachers had the highest level of teaching management overall ($\bar{X}$ = 4.73, S.D. = .36) and when considering the mean of each item, it was found that it was at the highest level for all items, with the item with the highest level of teaching and learning was the appropriate timing of overall learning activities and each step ($\bar{X}$ = 4.83. , S.D. = .54), followed by the process of setting up CCR-integrated participation and student-centered learning activities, respectively. The item with the least average teaching management was Organize activities by integrating the 5 stages of CCR concepts, to develop students' competence in interpretation, analytical thinking, synthesis, creativity, and mathematical problem solving ($\bar{X}$ = 4.65, S.D. = .68). Therefore, when comparing the difference between supervision 1 and supervision 2 found that teachers improved their ability and progress in teaching mathematics, equal to +0.79.

3. Instructors were asked to remark on the following learning outcomes of teachers in phase 3 that were examined using the teacher's teaching record form:

3.1 It was found that teachers in educational institutions had used all three concepts to write in a learning management plan integrated with the CCR concept, to design learning activities, and to expand the results with other teachers. The knowledge that has been developed includes the intellectual education concept, mentoring systems, and research-based learning management. However, several speakers from the Rajabhat University network in the northern group have received training in the subject matter.

3.2 The five phases in mathematics that use development knowledge to assist learning activities by combining CCR ideas are as follows: (1) preparation stage, (2) knowledge acquisition stage, (3) linking to action stage, (4) reflection and evaluation stage, and (5) learning summary. It was found that teachers had used the five stages of the activities to assist and put into reality actual arithmetic teaching and learning activities. This had boosted interaction between teachers and students, made students more assertive, and had made students love learning mathematics.

3.3 The general concept of intellectual education, mentorship, and research-based learning management, or CCR, may be used to teach and learn mathematics and should be maintained by instructors, it can be concluded after taking into account one's own ideas as well as those of the projects that are currently being developed. Since it's a good concept, it will help kids build their ability to solve mathematical problems and raise their awareness of the importance of learning

arithmetic. Additionally, it was seen from the students' conduct that they had a more positive attitude toward learning mathematics.

4. Teacher development utilizing the Integration of CCR principles, which came from the questionnaire with the teacher satisfaction evaluation scale, is displayed in table 2 as an effect of teacher satisfaction on research and workshop projects.

Table 2 Teachers' satisfaction with the project

No.	Development Questions	$\bar{X}$	S.D.	Satisfaction Level
1	Research and workshop studies on the incorporation of CCR ideas in teacher development	4.37	.54	A lot
2	Location / Service of staff	4.82	.40	More
3	The service process's procedural component	4.76	.43	More
4	The benefits received from the training	4.59	.49	More
5	Supervision and follow-up of trainees	4.44	.56	A lot
	Average on all sides	**4.60**	**.48**	**More**

From Table 2: It was found that teachers who participated in the research and workshop development projects: teacher development using the integration of CCR concepts had the highest overall satisfaction ($\bar{X}$ = 4.60, S.D. = .48), and when considering income, teachers' overall satisfaction with the project was at the highest level ($\bar{X}$ = 4.60, S.D. = .48), and when considering each aspect, it was found that at the highest level of 3 items, and at the highest level of 2 items, the aspect with the highest mean was location/service of staff ($\bar{X}$ = 4.82, S.D. = .40), followed by Process aspects of the service process ($\bar{X}$ = 4.76, S.D. = .43), Benefits received ($\bar{X}$ = 4.59, S.D. = .49), supervision and follow-up of trainees ($\bar{X}$ = 4.44, S.D. = .56), and the topic aspect of research and workshop projects: teacher development using the integration of CCR concepts ($\bar{X}$ = 4.37, S.D. = .54).

Results

Following are key points that succinctly summarize the research findings from the study of the outcomes of managing teachers' teaching and learning using the model of integrating CCR concepts towards changing teaching behavior in educational institutions, conducted by the Office of the Basic Education Commission:

1. The findings of the first phase of teacher training revealed that instructors had knowledge of utilizing activities integrating the CCR concept, knowledge of the mentoring system and learning by using research as a foundation, and comprehension of learning activities by integrating the five-step CCR concept, and put more of an emphasis on the process, understand the value of integrating CCR concepts to help students develop their ability to solve mathematical problems, share knowledge about teaching using the integration of CCR

concepts, and form a group to create teaching management that will result in new innovations used in teaching in the context of the subject.

2. The teaching results of mathematics teachers were compared to the evaluation of mathematics teachers from the second phase of supervision on the growth of competence and progress in teaching mathematics, using the integration of the CCR concept both times. The change in instructional management conduct had enhanced improvement, it was found while comparing the differences between the first supervision and the second supervision. Overall, it was found that the instructors' proficiency and advancement in instructing mathematics had improved, totaling +0.79 etc.

3. Using data from the teacher teaching record form that represented the outcomes of math instructors, the learning outcomes of math teachers were studied. In order to develop learning management plans that integrated CCR themes, to plan activities that will improve students' ability to solve mathematical problems, increase their appreciation for and understanding of the value of learning mathematics, and, based on observations, it was found that instructors had changed their methods of instruction. They had done this by using their understanding of concepts related to cognitive education, mentorship systems, and research-based learning management.

4. In accordance with the findings of the survey of math teachers on the aforementioned project, the teachers' overall satisfaction with it was at the highest level ($\bar{X}$ = 4.60, S.D. =.48), and when looking at each component separately, it was discovered that 3 items were at the highest level and 2 items were at a high level, location/services, personnel service ($\bar{X}$=4.82, SD =.40).

Discussions

From the results of teaching and learning management of teachers by using the model of integrating CCR concepts towards changing teaching behavior in educational institutions under the office of the basic education commission, there are important points to discuss the results as follows;

1. The teachers who participated in the study demonstrated behaviors that indicated a desire to alter the way mathematics was taught using new teaching techniques, according to the findings of the teacher training phase 1 on understanding and usage of activities incorporating CCR ideas, is the integration of CCR principles and the comprehension of 5 phases of activities based on 3 concepts to comprehend mathematics teaching and learning. In order to improve students' arithmetic problem-solving abilities and to see answers to issues on National Educational Test Results (O-NET) in mathematics, teachers are more process-oriented and emphasize the necessity of integrating CCR topics. By incorporating CCR concepts, there is a learning exchange about how to teach and learn mathematics, a group has been formed to develop mathematics teaching and learning management, and this has resulted in new teaching innovations that are used to teach in the context of problem areas, needs, and teaching at the same level, to create a network for learning exchange and assistance. This is

due to the project's clear basis and policy, which it begins to apply in order to produce quality instructors, thinking abilities, and math problem-solving skills for kids, and to have a clear development process. On both occasions, the presenters offered a wide range of information on the concepts of intellectual education, mentorship systems, and research-based learning management, as well as the supervision of instructors. Teachers have also come together to share knowledge, improve mathematics instruction through the incorporation of CCR concepts, school-level PLC process learning, and log book activities for math students, all of which have the effect of causing teachers to alter their behavior in teaching mathematics in line with the intended goal. In line with the findings of Panyapinitnukul (2015) study of the teacher development coupon project, a teacher development course designed to improve learning outcomes in English language learning groups by delivering a rigorous academic curriculum in Chaiyaphum Province. It was discovered that the project participants had knowledge and understanding before they were able to change the way they taught cognitive education. They also noticed that the teachers who participated in the project were present at the training sessions, and their teaching supervision revealed that overall and item-specific teaching management had increased on average. Additionally, the instructors that were developed expressed a high degree of satisfaction with the teacher coupon program as a whole. The qualitative data also demonstrated the instructors' proficiency in using the cognitive education method of instruction and learning management in the classroom.

2. Comparative results of the evaluation of math teachers' teaching-learning strategies using the integration of CCR concepts in the second and second phases, and the second time, it was discovered that math teachers had changed their teaching behavior, resulting in improved teaching and learning outcomes. When comparing the results of the first and second supervision, the overall and individual mean increases were greater than all of the first. This is due to the fact that math teachers have received training in cognitive education, mentoring systems, and research-based learning management, as well as having received twice as much mentorship from supervisors, but only once did the supervisor lead math teachers through their individual presentations and reports. Math instructors may improve their knowledge and skills in teaching and learning by employing the integration of CCR principles, as well as through working together to support one another and studying examples and methods from other teachers. In line with Pusiripinyo (2018), the learning management outcomes were investigated using the notion of intelligence, coaching and mentoring, and research as a foundation for behavior modification and the development of teaching competency in student instructors' Thai language courses. When taking into account the findings of the supervision evaluation, the first was of moderate quality and the second was of very good quality. Teaching behaviors of Thai language subject teachers were found to have been modified, including teaching preparation, purpose determination, instructional design, media/learning resource use, teaching and learning management, and evaluation and evaluation.

3. The learning outcomes of mathematics instructors, which were examined using data from the teacher teaching record form indicating the teachers' teaching outcomes, revealed that the teachers' conduct about teaching and learning had changed. Because teachers have been trained by a variety of expert trainers, they have the ability to apply knowledge to integrate the

concepts of intellectual education, mentoring systems, and research-based learning management, or CCR. Teachers of mathematics can use the integration of CCR concepts to write learning management plans. Be able to create teaching and learning activities that incorporate CCR concepts, and then apply your knowledge to extend the outcomes to other students and faculty members in the educational setting, particularly by utilizing the knowledge from the CCR integration activities' five steps, it may be used for instruction in classrooms. Consistent with Reungdam (2018) conclusion on the roles and benefits of expert training, personnel training is a tool of human resource development that helps develop change in knowledge management behavior skills and attitudes of personnel, and develop the ability to work better than ever.

4. The satisfaction of mathematics teachers with research and workshop projects: teacher development using the integration of CCR concepts revealed that the project had the highest level of overall teacher satisfaction. Because the project was aware of the O-NET problem in mathematics and received outside money to train more competent math instructors, it was discovered that it was at the highest level of both 3 and 2 items when each component was taken into account. Additionally, the Faculty of Education, Educational Service Area Offices, and schools that send teachers for training have collaborated on this issue since poor math test scores are a national concern in an effort to cultivate competent instructors and mobilize efficient math teaching techniques. As a result, the Faculty of Education is able to completely plan the project and provide the trainees with a place, personnel, and administration. This is in line with research by Pusiripinyo (2018) that looked at how satisfied quality instructors were with their efforts to enhance their instruction using competency-based knowledge standards. It was found that teachers were satisfied with teacher development both overall and in each aspect at the highest level, when considering each aspect found that it was at the highest level in 1 aspect, i.e., the benefits received, at a high level in 3 aspects is the management process of the facility, staff, and service procedures respectively.

Conclusion and suggestions

Applying the five-step process of learning activities and the integrated model of the CCR idea created by the researcher, instructors should concentrate on the following:

1. Highlights of 3 concepts are as follows:

1.1 Through contemplative education (CE), which aims to improve the psychological or inner aspect of learning, such as meditation, in-depth listening, and mental contemplation, the human spirit also grows in “inner knowledge.”

1.2 Coaching and mentoring (CM) is separated into the following two categories:

1.2.1 Coaching focuses on specific tasks or abilities on a particular difficulty, assisting the mentor in solving issues with their own job.

1.2.2 With an emphasis on general care or work and life difficulties, mentorship covers a wide range of themes, the majority of mentors have senior jobs or are seasoned professionals.

1.3 The idea of research-based learning management (RBL), with its guiding principles of emphasizing mentorship over lectures, focusing on asking questions and finding answers, and encouraging teachers to switch roles by letting students take initiative, emphasizes thinking, searching, seeking, and mentoring.

2. Using the integrated model of the CCR idea created by the researcher, there are 5 processes for learning activities that integrate CCR concepts, and they are as follows: step 1 realization is ready, step 2 seek knowledge: ask is teach, step 3 linking to action: action is understanding, step 4 evaluate and exchange learning: reflection is learning, and step 5 reflecting learning to development: writing is thinking.

New knowledge and the effects on society and communities

The findings of this study will assist both public and private educational institutions in developing instructional strategies that correspond to the principles of intellectual education, coaching and mentoring, and research-based learning. This is a crucial component of the management of competency-based education and aids in the establishment of educational equity in schools by giving students the opportunity to experience thinking, analyzing, problem-solving in a variety of scenarios, and dealing with challenging problems through their hands-on practice. According to the three ideas, it also resulted in the development of a competency-based curriculum that places an emphasis on more useful instructions. This knowledge will be used to manage learning in educational institutions for groups of students studying mathematics in terms of their abilities and learning styles, embracing other people's viewpoints that may have an impact on academic performance and the significance of curriculum creation teaching methods using a variety of methods that can help learners in studying in accordance with their individual learning styles for improved academic performance, it is also important to embrace other people's viewpoints that may have an impact on learning outcomes (O-NET). In this regard, this research offers the information needed to train math instructors, a talent that students in the twenty-first century need, since it is essential to train teachers with demanding and contemporary math teaching techniques, notably promoting critical thinking requires first learning from the instructor, then using the learned information and abilities to help learners develop even further. (Flavell, 1979)

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