

The Community of Practice of Researchers on the Social Cloud Model to Enhanced Researchers' Competencies

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Using the professional learning community concept, the authors integrated the idea of sharing and exchanging researchers' knowledge through the community of practice by using the social cloud model. The community of practice of researchers on the social cloud model aims to enhance researchers' competencies and was used as a guideline to enhance research competencies and publication competencies for professors or researchers. The questionnaires were mainly developed and used based on the research objectives. The research was divided into two stages. Stage 1: Design of the proposed model. Stage 2: Evaluation of the appropriateness of the proposed model by the experts. A research study found the following issues: Firstly, the community of practice of researchers on the social cloud model to enhance researchers' competencies consisted of 7 elements including 1) goal, 2) social cloud, 3) CoPR processes, 4) research work, 5) research publication, 6) evaluation, and 7) feedback. Secondly, the experts evaluated the appropriateness of the proposed model as agree.

Key words: *Community of Practice of Researchers, Community of Practice, Social Cloud, Researchers' Competencies, Professional Learning Community.*

Introduction

Research and development is a critical motivator to encourage the creation and improvement of various technologies and innovations. The success of researching for novice researchers in educational institutions is not an easy task as it involves creating new ideas or processes and



it takes time to build up by long experiences. One of the critical missions of university is to build graduates who are knowledgeable and valuable to the country.

Since the 1990s, the concept of professional learning communities (PLCs) has gained as a model and strategy to improve teaching quality and student learning outcomes. The major goal of the PLC is the collaboration of teachers to share and discuss their expertise in teaching, then reflective based on learning-oriented. This then leads to a relationship between PLC's member and the improvement in student achievement and teaching practice in the real world (Pang and Wang, 2016; Zhang et al, 2017).

The contents for teaching should always be up-to-date. Instructors need to learn new things and be the leaders in seeking new knowledge. Know how to finding knowledge is more important than giving knowledge. The university should start by advocating for an environment that supports research work in a systematic research process. Then it should manage knowledge by knowledge gathering, sharing, and disseminating what is found. A simple and powerful knowledge management tool is the Community of Practice (CoP). Knowledge's spiral process will help to increase the knowledge of the community, then feedback to adapt the teaching. It is making the knowledge that is always up-to-date, which will benefit the instructors, students and the nation (Chamnongthai, 2016; Wipawin, 2004; Nakbut, 2006; Panich, 2006).

Presently, people have increasingly used cloud computing for on-line communication. It is easy to use, reaches people immediately, two-way communication, and supports multimedia. The use of social cloud support creates accessibility of people in the organisation. It also assists in linking groups of people in the community with the same interests. Also, it supports collaboration work and maintains existing relationships (Wichitbunyarak, 2011; Fasli and Ozdamli, 2018).

According to PLC concept, the authors integrated the idea of sharing and exchanging of researchers' knowledge through CoP by using the social cloud. This social learning from the collaboration of novice researchers and experienced researchers, who take the role of a coacher, can construct social knowledge. The proposed of the community of practice of researchers on the social cloud model to enhanced researchers' competencies (CoPR model) can be used as a guideline to enhance research competencies and publication competencies for professor or researchers.

Research Questions

What are the research competencies and publication competencies for professors or researchers?

Scope of the Study

The population in this study consisted of experts who have experience in an area of knowledge management, research work and research publication, education, besides information and communication technologies.

The sample group comprised of seven experts who either held a doctoral degree or had at least five years' experience in related fields for evaluation and suggestions. A purposive selection method was selected.

Variables of the Research

The independent variable was the community of practice of researchers on the social cloud model to enhance researchers' competencies, and the dependent variable was the appropriate evaluation of the CoPR model.

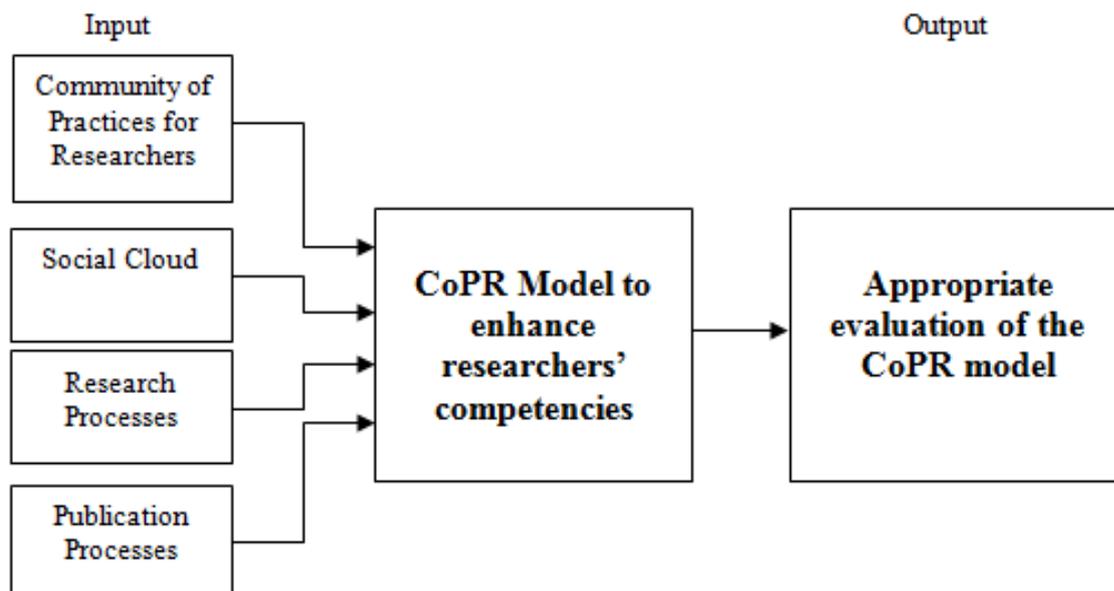
Research Objectives

1. Design of the community of practice of researchers on the social cloud model to enhance researchers' competencies.
2. The experts evaluated the appropriateness of the proposed model.

Conceptual Framework

The conceptual framework of the community of practice of researchers on the social cloud model to enhance researchers' competencies is shown in Figure 1.

Figure 1. Conceptual framework.



Literature Review

Learning in Community of Practice

The community of practice (CoP) is a group of people who are interested in or have a problem in the same thing. Besides, enhancing of knowledge and expertise in what community members are interested in can be done through collaboration with the community continuously. Currently, CoP is the social learning theory that has been adopted by most organisations. It is not routine work. Conversely, they will meet to share and exchange information, in-depth knowledge and recommendation for resolving the problem in various forms at any convenient time through the cloud. This is done mostly by discussions by topic of interest or group level. Finally, social knowledge can be constructed as a major part of the learning outcomes of a group in the community (Mustapha, 2018; Uthailertarun, 2002; Houda et al, 2019).

The Use of Social Cloud

Shaidah and Hejab (2017) study the use of social media for a final year undergraduate project supervision from students majoring in computer science, information technology or information systems at the Northern Border University (NBU), Kingdom of Saudi Arabia, who enrolled for the final year projects. Faculty members are the project supervisors. There were 43 students and ten faculty members who participate in this study. Each faculty member can supervise only one group project, which consists of three to five students in a group. The study found that on-line supervision can be exploring research ideas. Conversely, in the

development stage, students are supposed to write, execute and run a programming code, they require off-line or face-to-face supervision.

Research Processes

One of the most challenging stages of the research process is the initial selection of a problem and then searching for relevant research works and review of the literature, obtaining a summary of various methods, advantages and limitations of previous researches, seeking the best method in the past. Next, we should determine an interesting research topic and then analyse the problems and find out why the previous methods cannot solve these problems. Then we propose a new concept in solving problems to be exhausted or performed better than ever. Next step is to set the objectives and conditions or scope of a study. Then we find a method or an algorithm to solve the problems. Finally, the proposed method is proved and evaluated by either using the model to prove the possibility and performance evaluation or an experiment to find an accuracy rate of the proposed method. Then we analyse the results to find the causes and guidelines to prevent potential errors. The limitations and side effects can be used as a guideline for further study. Lastly, the researcher summaries the results of the study, which is then compiled into a study report (Chamnongthai, 2016).

Boonphen et al (2018) identified researchers' competencies by a study of factors which affected doing the research successfully and finding conditions and processes which affected doing research successfully in the Thai society context. The samples group was the faculty members who work in 9 national research universities. The selection criteria are the faculty members who are experienced in doing research and published their research in the national or international proceedings or journals. Purposive sampling was used for data collection through in-depth interviews. We categorised the data and did the reliability test. Next, we analyse the content systematically. A successful researcher should have an upper-level research competency as a basis. It consists of various lower-level competencies then integration in one researcher. The researcher competencies comprised of 1) knowledge 2) skill 3) personal attribute and 4) behaviour desirable.

Meerah et al (2012) identified five factors for successful research such as 1) statistical/quantitative data analysis skills 2) information solving skills 3) problem-solving skills 4) communication skills 5) research process skills. Cheng and Zhang (2012) considered ten factors and then categorised them into three issues as follows: 1) research quality 2) research ability 3) management skills.

Publication Processes

Researchers should set the title to be meaningful from the findings that stand out or match with the issues of the problem. The abstract contains only the complete essence, which consists of research objectives, variables, population and samples. The data analysis is described as research instruments, data collection methods, statistical used in data analysis. Then research results and recommendations. Start writing the background and importance of the problem. The reference documents to convince and understand the causes of selected research problems is then concluded. Next, the literature review is an evolutionary narrative in the solution of the selected research problems. Advantages and limitations of the methodologies that each researcher proposed. Raising one solution will lead to a better methodology. Conduct development as a conceptual framework or theoretical framework to test the hypothesis or model further. Research methods must specify the research type, population and sample groups, including the acquisition of the samples, research instruments and how to evaluate the quality of the instruments and data collection procedures, an analysis of data and statistics used. Finally, showing a result, computation, or simulation to confirm the superior performance over the previous methods. Refer to a source of knowledge every time that referenced in the content, and appearance in the bibliography (Chamnongthai, 2016; Thonglad, 2018).

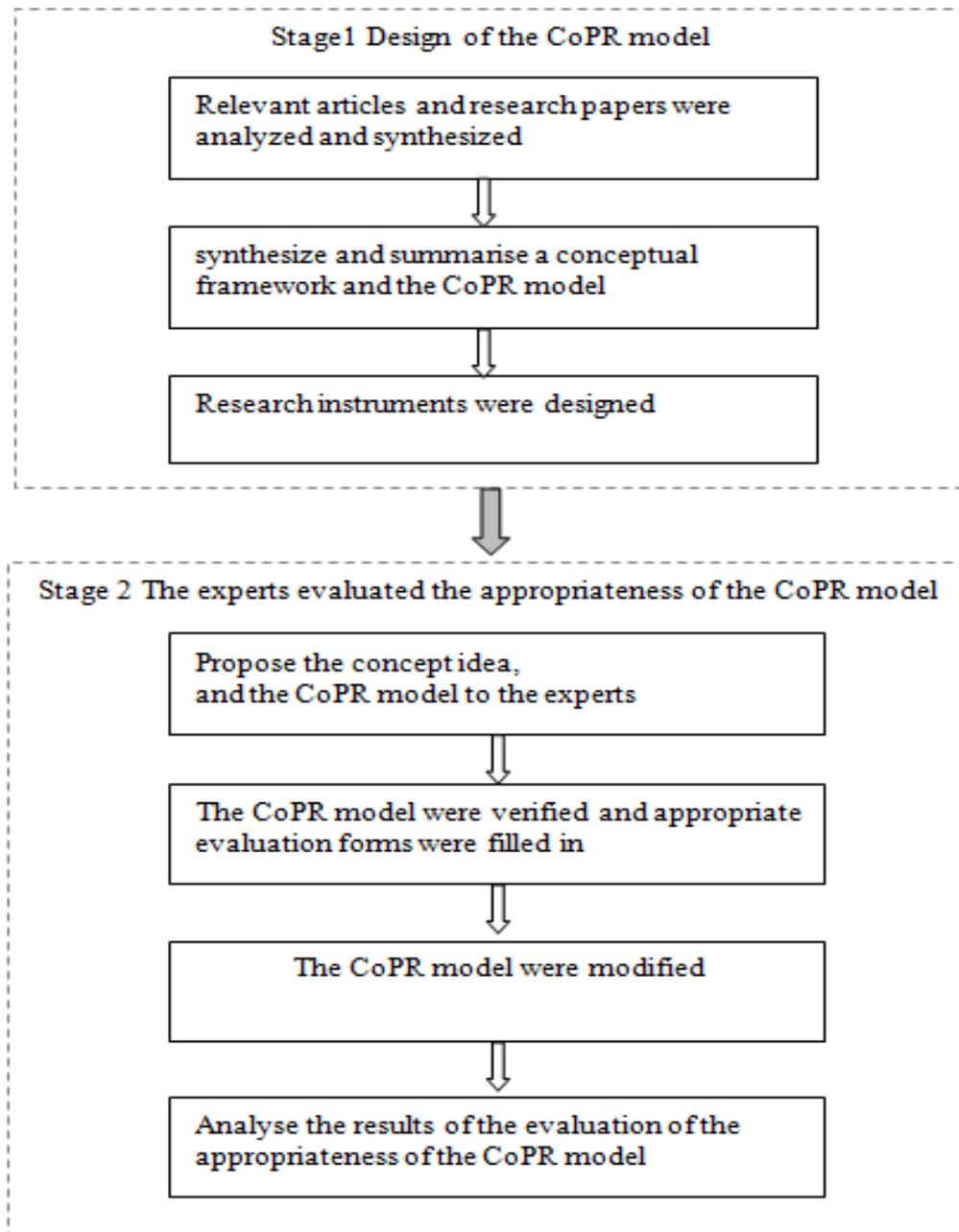
From CSUB (2017) describes the self-assessment list as follows: 1) Introduction, must attract readers, there are linking sentences from the introduction to research proposals. Also, no conflict with research study versus facts. 2) The main content, each paragraph has a precise sentence topic and focuses on the research topic. There are sufficient/appropriate examples which used to support the topics in each paragraph. Following the introduction, there is at least one paragraph describing the research problem, containing an explanation and connecting to research topics. 3) A summary has summarised sentences at the end 4) References, always refer to the source document. Referring to the reference title must be done accurately.

Methodology

There are seven researchers or experts who either held a doctoral degree or at least five years' experience in a specific field were purposively selected. According to Jamil (as cited in Hamzah, et al, 2019), a minimum of five years working experience would be enough to ensure lecturers with expertise in their respective fields. In this study, there are a couple of researchers or experts who experience each area of knowledge management, research work and research publication, besides education, respectively. In addition, there is one researcher or expert who suffered in a field of information and communication technology.

The research is divided into two stages according to the objectives of the study, as shown in figure 2.

Figure 2. The steps to design and the appropriate evaluation of the CoPR model



Stage 1: Design of the community of practice of researchers on the social cloud model to enhance researchers' competencies as follows:

1.1 Relevant articles and research papers were analysed and synthesised in the following topics: Social Cloud, Professional Learning Community (PLC), Community of Practice (CoP), Peer-Coaching, Reflective, Research Processes, Publication Processes, Research Competencies and Publication Competencies

1.2. Use the obtained information to synthesise and summarise as a conceptual framework and the CoPR model.

1.3 Research instruments were designed as follows: 1) the community of practice of researchers on the social cloud model to enhance researchers' competencies and 2) an appropriate evaluation form.

Stage 2: The experts evaluated the appropriateness of the proposed model as follows:

2.1. Propose the concept idea and the CoPR model to seven experts for evaluation and suggestions.

2.2 The CoPR model was verified, and appropriate evaluation forms were filled in by the seven identified experts.

2.3 The CoPR model was modified based on the advice of the experts.

2.4 Analyse the results of the evaluation of the appropriateness of the CoPR model using mean () and standard deviation (S.D.). Five criteria for evaluation were considered using Likert scales anchored with the terms Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree (Samsudin, et al, 2019; Brown, 2010).

Results

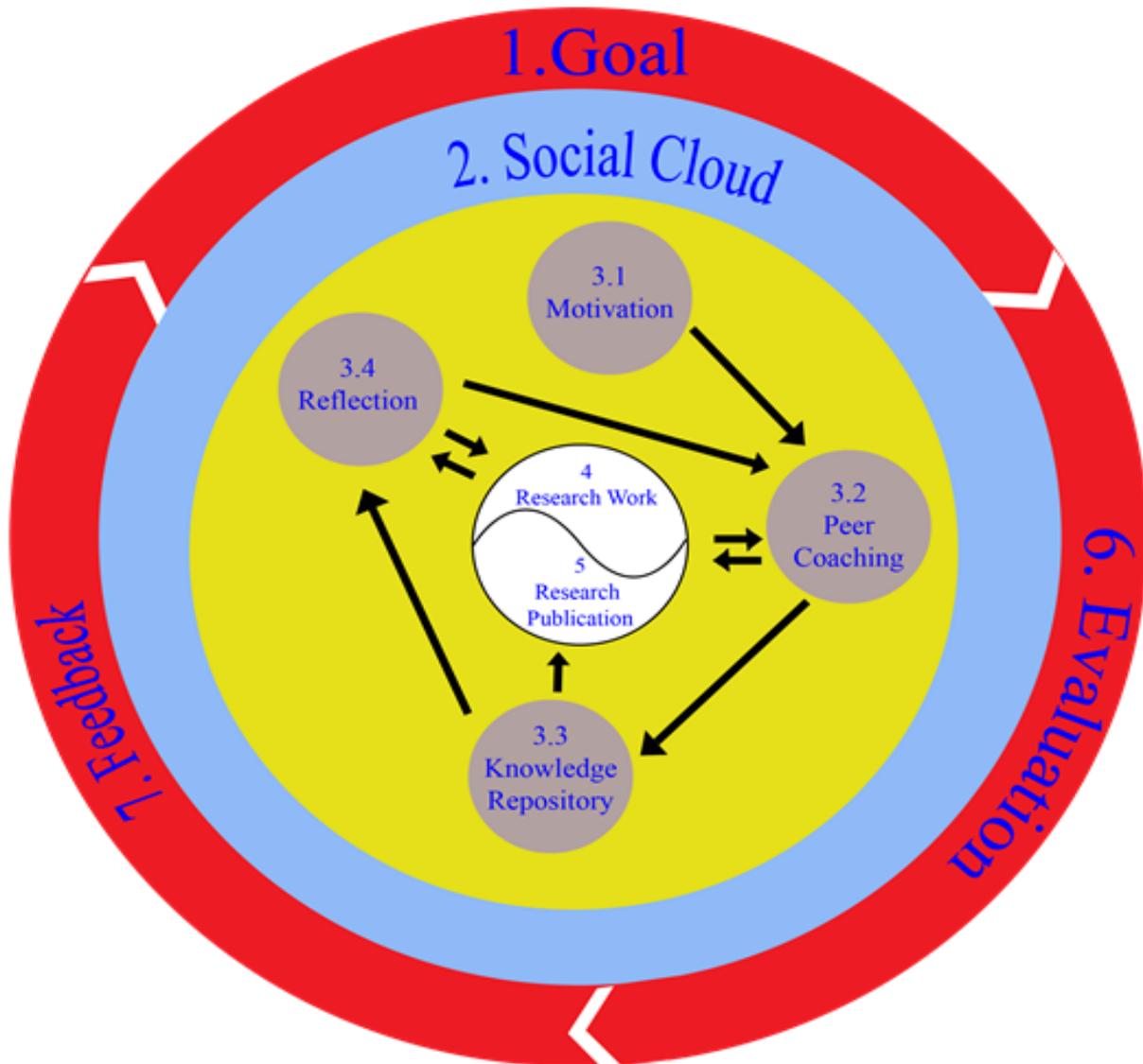
Stage 1: Design of the community of practice of researchers on the social cloud model to enhance researchers' competencies (CoPR model) as illustrated in figure 3.

Firstly, set goals with a group or peer-coaching for collaboration. By using information technology communication, forming a social cloud. Besides, the use of the community of practice process to create collaboration and knowledge sharing. This leads to enhancement of the research competencies and publication competencies of the researchers. The components of the CoPR model as follows.

Goal

Setting a goal with a group or peer-coaching using short training to guide the way to collaboration work by face-to-face and using cloud technology. Convince the importance of doing research work and research publication. In the initial stage, research on any subject according to their aptitude and interest. To create a good feeling and become familiar with doing research work or research publication.

Figure 3. The community of practice of researchers on the social cloud model to enhance researchers' competencies (CoPR model)



Social Cloud

The social cloud refers to social networks developed using cloud computing services. It allows users to connect through communication devices such as computers, smartphones, tablets or other devices that have an internet connection. Therefore, the social cloud is a two-way communication channel that is used to communicate with members in a community immediately.

3. The process of the community of practice of researchers on the social cloud model to enhance researchers' competencies

The processes of the CoPR model are as follows.

Motivation

The main objective is to conduct an interest of the researcher for activities that are linked to previous experience. Then make the researcher interested and focused on what is involved in doing research work or research publication. Point to the advantages of doing research work or research publication, and limitations without doing it. Finally, it is important to be proud of a success when the goal is achieved and raised his or her competencies.

Peer-coaching

In grouping or peer-coaching, consider grouping by interested in research as follows: 1) Researchers with the same level or similar of knowledge and experiences, have the same interest in the discussion of problems from the same experience. 2) Expertise or experienced researcher who act as a coach to give suggestions or comments to novice researchers, as a coachee. There should be at least one expert or experienced researcher assigned to peer-coaching with 5-8 novice researchers in a group to support learning. Then the novice researchers can get suggestions from expertise.

Information Resources to Support Researchers (Knowledge Repository)

The system will provide relevant resources or links to previous researches, to support research work and research publication. Be available to search and learn from information resources which support those researchers. To support researchers' needs, including the knowledge base of the research process, a directory of the expertise, sources of research funding, the example of the researches, and links to an available website, etc. The knowledge repository provided the information sources including 1) the national conference database such as www.conferenceintha.com 2) the international conference database such as conferencealerts.com, ieee.org, etc. 3) the national journals' indexing, for example, the Thai-Journal Citation Index Centre or TCI 4) the international journals' indexing including Scimago Journal & Country Rank, Scopus, etc. 5) Bealls' list of predatory journals and publishers, etc. 6) others academic information sources.

Reflective

Reflect from what he or she has done by self-reflectio, collaborating with a group, or a coach. Initially from the "good things" then rating his or her knowledge and outcome at what level by assigned rubric scale. Next, point out the limitations that are areas for improvement. One critical factor to concerned, as mentioned by Stavroulia and Lanitis (2019) stated the

following. The experienced teachers through reflection could understand in-depth various educational issues, then provide recommends to inexperienced teachers. While the inexperienced teachers may use reflective practice to increase their understanding and knowledge by self-reflection or collaboration with a group.

Research Work

Initially, writing a research proposal starts from a selection of the research problems, by guidance and discussion with a coach both by face-to-face and use of the social cloud. Secondly, define the objectives and conditions or scope of the study. Thirdly, finding a method or an algorithm to solve the problems. Next, prove and evaluate the proposed method. Once the research results have obtained, then analyse the results for finding the causes and guidelines to prevent potential errors. Finally, the researcher should summarise the findings of the study into the report. All these steps can either learn from the examples provided in the knowledge repository or guidance from a coacher by using the social cloud. Also, sharing and exchanging of their idea and knowledge with the community of practice of researchers.

Research Publication

Firstly, start by setting up the topic of an article, under guidance and discussion with a coacher both by face-to-face and use of the social cloud. Secondly, a literature review is evolutionary in the solution of the selected research problems, and the relevant researches can search from the knowledge repository such as ThaiLis database, IEEE Xplore digital library, ACM digital library, etc. Thirdly, write a summary and discussion of the results. Then, prove and evaluate its efficiency. Writing references and the various styles for citing the references is also provided in the knowledge repository. Lastly, write the abstract which summarises the article. Usually writing 3-5 keywords or key phrases which including all independent and dependent variables from the title. Next, searching for publication sources such as academic conferences, academic journals, the knowledge repository provided the information sources, for example, conference database, journals' indexing, etc. Then decide to submit the article for preferred publishing. Finally, if the article is accepted, do registration and payment. Besides, tracking the publication process for correctness. These steps can either learn from the examples provided in the knowledge repository or guidance from a coacher by using the social cloud as well. So the researchers can submit their articles to an appropriated publisher successfully.

Evaluation

Development of the researchers' competencies in two areas as following.

6.1 How to enhance research competencies, the details are as follows:

Writing a Research Proposal

Initially, writing a research proposal starts from a selection of research problem. Secondly, define the objectives and conditions or scope of the study. Thirdly, finding a method or an algorithm to solve the problems. When the research proposal is approved, then assess the research competencies as follows. (1) Determine the research problem. (2) Problems analysis. (3) The idea of thinking for the problem-solving. (4) Review of the relevant literature. (5) Defined the objectives of the study. (6) Defined the scope of the study. (7) Describe the benefits of the study. (8) Explain the research procedures. (9) Writing references. (10) Writing keywords or key phrases.

Writing Research Results

When the research proposal has approved, next prove and evaluate the proposed method. Once the research results are obtained, then assess the research competencies as follows: (1) Determine the methods, models, or algorithms (2) Assuming the research hypothesis (3) prove and evaluation

Writing Summary of the Study and Research Report

After writing the research results, analyse the results for finding the causes and guidelines to prevent potential errors. Lastly, summarise the results of the study, and compiled into the report. After that writing the research report, then assess the research competencies as follows: (1) Writing an analysis and discussion (2) Writing the research summary and report (3) Writing the bibliography (4) Writing an abstract.

6.2. How to enhance publication competencies, the details are as follows:

Writing an Article

Firstly, start by setting up the topic of an article. Secondly, summarise the contribution of the study, stated the advantageous, which is a difference in how to solving problems from previous methods. Next, write a summary and discussion of the results. Then, prove and evaluate its efficiency. There is an analysis of errors, limitations, and side effects caused by the proposed method. Then write the references and bibliography. Finally, write the abstract and the keywords or key phrases. When writing the article is complete, assess the publication competencies as follows. (1) Setting up the topic of an article, (2) Writing abstract, (3) Writing keywords or key phrases, (4) Explaining the structure of an article, (5) Writing the



introduction or background, (6) Review of the literature, (7) Writing the proposed method, (8) Presentation in the form of formulas, graph, patterns, images and tables, (9) Summarise and discussion of the results, and (10) Writing bibliographies.

Selection of the publication sources

After completion of the article, search for publication sources such as academic conferences, an academic journal. Then, prioritise the publication sources by the popularity of readers. After that, evaluate the appropriateness and the opportunity to get acceptance to publish. Finally, decide to submit the article for publishing. Once the publication source has selected, then assess the publication competencies as follows: (1) Searching (2) Prioritise (3) Assessment and decision making.

Communication with the Publication Sources

Once the publication source has been selected, then search for the detailed information for submission of an article. Next, format the article as specified. Submit articles according to the desired channels. If the article has accepted, do registration and payment. Also track the publication process for correctness. Once the communication with the publication sources has completed, then assess the publication competencies as follows. (1) Coordinating (2) Submission of an article (3) Tracking publication acceptance (4) Registration and payment (5) Tracking publication process.

Feedback

After evaluating the research competencies and publication competencies, then, the researcher will get feedback for explaining the knowledge that he has received. This allows the researcher to develop his or her competencies by repetition with higher goals setting. For example, the ability to research with funding from the university or external institution. Furthermore, the ability to research publication at the national level to the international level, and the ability to apply to other subjects further.

Stage 2: The experts evaluated the appropriateness of the community of practice model for researchers on the social cloud to enhance researchers' competencies, as shown in table 1.

The experts evaluated the appropriateness of the CoPR model as Agree, with a mean of 4.48, S.D. = .62. The principle and concept used as the basis for developing the community of practice model for professional researchers on the social cloud to develop researchers' competencies as Strongly Agree, with a mean of 4.71, S.D. = .49. The procedures and details of the community of practice model for professional researchers on the social cloud to develop researchers' competencies as Strongly Agree, with a mean of 4.64, S.D. = .65. The

factors of research competency as Agree, with a mean of 4.43, S.D. = .61. In terms of the writing of the research results has the highest score, as Strongly Agree, by a mean of 4.53, S.D. = .59. In terms of the writing of the research proposal has the lowest score, as Agree, by a mean of 4.00, S.D. = .68. The factors of publication competency as Agree, with a mean of 4.14, S.D. = .90. In terms of publication sources selection, has the highest score, as Strongly Agree, by a mean of 4.57, S.D. = .79. In terms of communication with the publication sources, has the lowest score, as Agree, by a mean of 4.43, S.D. = .79.

Table 1: The experts evaluated the appropriateness of the community of practice model for researchers on the social cloud to enhance researchers' competencies

Evaluated items	\bar{X}	S.D.	Level of Appropriateness
1. Principles and concepts used as the basis for developing the community of practice model for professional researchers on the social cloud to develop researchers' competencies	4.71	.49	Strongly Agree
2. The objectives of the community of practice model for professional researchers on the social cloud to develop researchers' competencies	4.29	.76	Agree
3. Procedures and details of the community of practice model for professional researchers on the social cloud to develop researchers' competencies	4.64	.65	Strongly Agree
4. Research work	4.43	.54	Agree
5. Research Publication	4.57	.53	Strongly Agree
6. Evaluation	4.38	.72	Agree
6.1 Research competencies	4.43	.61	Agree
(1) Preparation of research proposals	4.00	.68	Agree
(2) Writing research results	4.53	.59	Strongly Agree
(3) Summary of research and writing research reports	4.43	.53	Agree
6.2 Research publication competencies	4.14	.90	Agree
(1) Writing articles	4.43	.79	Agree
(2) Selection of sources	4.57	.79	Strongly Agree
(3) Communication with publishers	4.29	.95	Agree
7. Feedback	4.80	.45	Strongly Agree
Overall	4.48	.62	Agree

Conclusion and discussion

The study found the following. Firstly, the community of practice of researchers on the social cloud model to enhance researchers' competencies consisted of 7 elements including 1) goal 2) social cloud 3) CoPR processes 4) research work 5) research publication 6) evaluation 7) feedback. The CoPR model initially set goals with a group or peer-coaching for collaboration. By using information and communication technology, forming a social cloud. The use of the community of practice process creates collaboration and knowledge sharing. This leads to enhancement of the research competencies and publication competencies. Same as Nurmilah, et al (2020) who stated that the professional development of lecturers in the fields of research by guiding them in the writing of research proposals. This is also similar to the study of Pang and Wang (2016) which stated that the concept of PLC has gained student achievement. Secondly, the experts evaluated the appropriateness of the CoPR model as Agree. The factors of research competencies and publication competencies as Agree.

Presently this proposed model is on the implementation stage, with the faculty members of Rajamangala University of technology Suvarnabhumi as a sample group. The study needs more sample groups to investigate. Until now, the critical factors concerned are the community members, especially novice researchers, expected for support information in the knowledge repository. The recommendations from a coach through the social cloud can be exploring research ideas and reflection, similar to the study of Shaidah and Hejab (2017) and Stavroulia and Lanitis (2019).

For further study, the implementation of other groups will be considered. When the research processes are complete, then conduct a research report and evaluate the research competencies by conduct a self-assessment check-list using a 4 level scales (0 - 3). Then obtain feedback of the higher research competencies. The research publication may be carried out when conducted partial results of the research, for example, analyse and synthesise of relevant documents and researches, or when all the results are performed thoroughly. After getting acceptance to publish the research, then evaluate the publication competencies by conduct a self-assessment check-list as well. Lastly, gain feedback to obtain higher publication competencies.

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