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The Development of Young Researchers by the Professional Learning Community of the Thailand National Sports University

Siriporn Meepadung[1], Jutharat Bumrungthai[1], Rattigan Phusit[2] & Kanjana Rattanapracharom[3]

[1] Faculty of Education, Thailand National Sports University Sukhothai Campus, Sukhothai, Thailand

[2] Faculty of Liberal Arts, Thailand National Sports University Sukhothai Campus, Sukhothai, Thailand

[3] Faculty of Sports and Health Science, Thailand National Sports University Changmai Campus, Changmai, Thailand

Correspondence: Siriporn Meepadung, Thailand National Sports University, Sukhothai Campus, Sukhothai, Thailand.

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Abstract

This research and development project aims to develop young researchers at Thailand National Sports University using the Professional Learning Community (PLC) framework. The research was conducted in four phases: studying the research problem, and developing a 5-step approach to young researchers through PLC, experimentation, and lessons learned success factors. The project had 36 participants. The results revealed that factors promoting research scored an average of 3.45, indicating a high level. Similarly, knowledge, skills, and research experience averaged 3.46, also reflecting a high level. The 5-step PLC process utilized for fostering young researchers includes establishing shared values and norms, collaborative practice toward a common goal, professional community cooperation, exposure to guidance, and reflective dialogue. As a result, six developmental approaches for young researchers were identified: self-development in knowledge, skills, and experience; preparation of research projects; writing research project proposals; implementing research projects; time management; and creating a conducive research atmosphere on campus. Implementing these approaches led to the formulation of 21 research proposals. Evaluation of these proposals yielded an average score of 3.51, meeting the criteria with a 100% success rate. Noteworthy aspects include openness, utilization of external expert networks, adjustment of attitudes towards research significance, and administrative support for research. In summary, this study underscores the significance of the 5-step PLC process as a pivotal approach in nurturing the next generation of researchers. Thailand National Sports University and other institutions can adopt this process to foster a culture of research and development among faculty and students.

Keywords: professional learning community, research and development, Thailand National Sports University, young researcher

1. Introduction

In the 21st century, often considered the era of information technology, the world is undergoing changes in various aspects, including the economy and society. These changes necessitate adaptations to foster competitiveness amidst the global flow of progress. Countries worldwide are striving to embrace a new wave of transformation known as the 'knowledge society' and the knowledge-based economy, wherein the utilization of knowledge and innovation plays a crucial role in national development. Therefore, to enable countries to evolve into innovative societies, development strategies must prioritize the utilization of scientific knowledge, research and development, and technological advancements, and foster a culture of intense creativity. Additionally, there should be an emphasis on developing the environmental conditions and fundamental factors that facilitate investment in research and development, the cultivation of research personnel, scientific infrastructure, technology, and effective management practices. These factors collectively contribute to propelling national development towards its goals. (Nölting, Molitor, Reimann, Skroblin, & Dembski, 2020; Ashida, 2023)

The Thailand National Sports University, as a specialized institution of higher education, shares a mission similar to that of general universities, which includes producing graduates, conducting research, providing academic services, and preserving cultural heritage. Its research principles focus on promoting, supporting, and conducting

research and development activities to generate new knowledge in the fields of sports, physical education, health promotion, sports science, sports management, sports business, and related disciplines. (Thailand National Sports University Act, B.E. 2019) Additionally, it serves as a hub for developing and nurturing sports personnel in the country. In the development strategy for research and innovation at the Thailand National Sports University, efforts are made to enhance the research and innovation capacity of its personnel, enabling them to create high-quality research and innovation outputs. Collaboration with external organizations in research and innovation is also promoted, with a specific focus on utilizing research and innovation outcomes for practical benefits. The university recognizes and appreciates outstanding researchers to inspire and motivate its personnel in achieving notable research outcomes. Thus, the Thailand National Sports University aims to produce quality research work that contributes to the creation of knowledge beneficial to society and the nation, while ensuring internal quality assurance in its educational endeavors. The university has established effective systems and mechanisms to efficiently manage and control research and innovation activities, aiming to yield beneficial outcomes. In the past academic year, the internal quality assurance assessment of the Thailand National Sports University indicated fair results in terms of research and innovation outcomes. (Thailand National Sports University, 2021)

Educational institutions have a mission to address policy challenges in their work, which involves fostering a culture of collaboration and shared learning. One effective model for collaborative work is the Professional Learning Community (PLC), which is a process of creating change through learning from the real work experiences of a group of individuals who come together to work collaboratively and support each other. Its objective is to develop shared knowledge, set common goals, innovate (Datnow, 2018), and reflect on individual and collective outcomes through a process of exchanging learning, analyzing and criticizing, and collaborating. The work format shifts from individual work to teamwork, with shared goals within the context of a PLC. The aim is to assist and support one another, foster a positive work culture, and engage in continuous development (Purcell, Henriksen, & Spengler, 2019; Alkrdem, 2020; Dai, 2022; Ismail, Omar, Halim, Faizuddin, & Rathakrishnan, 2022)

Implementing PLCs leads to quality improvement in professional practice, reduces feelings of isolation, increases commitment to missions and goals, and intensifies efforts to achieve objectives (Hord, 2003; Jalaludin, Abdul, Abdullah, & Mustakim, 2022). Implementing PLCs in the context of research faculty, especially for early-career researchers who have not yet served as project leaders with substantial funding, can be highly beneficial. The PLC process allows these researchers to learn and understand the research process through a culture of collaborative learning, aiming to develop high-quality research proposals that can secure funding and successfully carry out research projects. It also contributes to their future professional development as researchers. Furthermore, PLCs have positive effects on early-career researchers by reducing feelings of isolation in research work, increasing commitment to university missions and goals, and intensifying efforts to achieve objectives. They serve as a "learning power" that enhances research practice, leading to better outcomes (Karo & Sovajassatakul, 2020). Through PLCs, researchers gain knowledge, beliefs, and understanding of the research work and its content, including awareness of the role and behaviors required for successful research. This, in turn, helps align the research outcomes and innovations of the Thailand National Sports University with the standards of higher education. Additionally, PLCs provide access to various necessary information and quickly broaden the professional knowledge base, leading to improved professional development and inspiring faculty members to enhance and dedicate themselves to their work.

Implementing PLCs in the research faculty of the Thailand National Sports University fosters a collaborative culture of learning, enhances research competencies, and motivates and inspires faculty members to continually improve their professional practices.

2. Objectives

1) To study the research problems faced by teachers at the Thailand National Sports University

2) To develop young researchers by utilizing PLC

3) To test the approaches for developing young researchers using PLC

4) To design lessons learned from the success factors in developing young researchers using PLC

3. Method

The research method was divided into four phases according to the research objective as follows:

Phase 1: The study aimed to investigate the research problems faced by teachers at the Thailand National Sports University, which began in June 2022. The population of the study consisted of 573 teachers from 17 campuses of the Thailand National Sports University, and a sample group of 236 participants was selected using Taro Yamane's

calculation formula, stratified random sampling method (Taro, 1973), and ratio comparison method. The data collection tool was an Interval Scale questionnaire with a 5-point Likert scale, constructed by reviewing relevant literature, documents, textbooks, and articles related to the research topic. The questionnaire was analyzed to establish its structure and content scope. Three experts were invited to review the questionnaire's content validity and provide an Item Objective Congruence (IOC) score using Rovinelli and Hambleton's method (1976). Questions with an IOC value of 0.50 or higher were retained, while questions with a lower IOC value were either revised based on expert feedback or eliminated. The final version of the questionnaire was used to collect data, which were analyzed using mean ($\bar{X}$) and standard deviation (SD) statistics. The interpretation criteria, based on the work of Wanitchbuncha (2016), were applied as follows:

A mean score of 4.21 – 5.00 indicates the highest level of problems.

A mean score of 3.41 – 4.20 indicates a high level of problems.

A mean score of 2.61 – 3.40 suggests moderate problems.

A mean score of 1.81 – 2.60 indicates there are few problems.

A mean score of 1.00 – 1.80 indicates the least level of problems.

Phase 2: Developing Young Researchers Using PLC

This phase involves setting up a PLC team and conducting an initial meeting to exchange knowledge and understand the problems that teachers face in their research work. The following approaches are then established for the development of young researchers:

1) Prepare a research team of 36 people to enter the PLC process together to develop young researchers. The team should consist of 31 young researchers who wish to participate voluntarily, as well as 5 experts with knowledge and experience related to research.

2) Select the research area by choosing a Thailand National Sports University campus that had problems related to the evaluation of the quality of internal education, with research and innovation performance standards that were of fair quality (an average score of less than 3.51). A physically ready campus with information resources for exchanging knowledge should also be considered. The Thailand National Sports University Sukhothai Campus was selected, which had internal quality assessment results for the Academic Year 2020-2021 (which begins in June and ends in May of the following year) with an average score of 3.21 and 3.45 for research and innovation performance standards.

3) Developing young researchers at Thailand National Sports University using PLC in 5 steps: This study applied the Professional Learning Communities (PLC) approach to develop young researchers at Thailand National Sports University, following five steps: 1) Establishing shared values and norms, 2) Creating collective focus, 3) Promoting collaboration and resource pooling among community members, 4) Seeking expert advice and conducting study visits, and 5) Holding reflective dialogues to discuss and evaluate the implementation results. To inform the PLC team about the research problems identified in Phase 1, data were collected using a meeting record model for knowledge exchange. Approaches for the development of young researchers were then developed based on relevant studies, papers, and research. The team organized the issues and prepared a meeting record form for knowledge exchange, and the data were analyzed using content analysis of meeting recordings, transcripts, and notes. A seminar will be held on August 4-5, 2022, at Conference Room 2, Thailand National Sports University Sukhothai Campus, using the PLC 5-step process to exchange research knowledge and problem-solving among researchers. The process in which five teams will reflect on their plans and practices, exchange learning experiences through two-way communication, and discuss research practices.

Phase 3: Implementation of Young Researchers' Development Methodology Using PLC

This phase involves experimenting with a participatory workshop in four steps: 1) Planning, 2) Implementation, 3) Observation, and 4) Evaluation and reflection, using PLC to develop young researchers. Information is collected from meetings, knowledge exchange, and observations, and data is analyzed by examining the content of recordings, transcripts, and meeting notes. Observations are recorded for further analysis.

Phase 4: Lessons Learned - Success Factors for Young Researcher Development Using PLC

The success factors are identified by conducting a meeting to exchange lessons learned, followed by data analysis using content analysis techniques. The success factors of developing young researchers using the community learning process are based on an After Action Review (AAR) method.

4. Results

The results are classified according to specific objectives and presented in 4 dimensions as follows: The objective of Clause 1 was to study the problems of research conducted by teachers of the Thailand National Sports University. It was found that research problems consist of 1) factors that promote the research work of teachers, and 2) knowledge, skills, and research experience.

Table 1. The research problems faced by teachers at the Thailand National Sports University: factors that promote the research work of teachers

Item	$\bar{X}$	SD	Level of problem
Policy that promotes research	3.49	1.02	high
Planning research plans that are in line with policies	3.40	1.09	moderate
Promoting teachers' research abilities	3.52	1.01	high
Research budget allocation	3.44	1.08	high
Provision of facilities to support researchers	3.42	1.19	high
Research management system	3.45	1.16	high
Average summation	3.45	1.11	high

Table 2. The research problems faced by teachers at the Thailand National Sports University: knowledge, skills, and research experience

Item	$\bar{X}$	SD	Level of problem
Self-development	3.42	0.98	high
Preparation	3.39	1.01	moderate
Writing research proposals	3.49	1.00	high
Conducting research	3.36	1.09	moderate
Time management	3.63	1.01	high
Research environment	3.49	1.06	high
Average summation	3.46	1.05	high

In cases where the SD is greater than 1, it may be due to the fact that the sample group exhibits high variability in terms of age, job position, and duration of employment.

The objective of Clause 2 is to develop young researchers by utilizing PLC. The exchange of research knowledge and problem-solving among researchers to take the research problem data in Phase 1 as an approach for exchanging learning in the PLC group in 6 topics as follows: 1) How can we develop ourselves in terms of knowledge, skills, and research experience? 2) How can we prepare for research project development? 3) How can we write a research proposal? 4) How can we conduct research? 5) How can we manage our time? And 6) How should we create a research atmosphere within the university?

Use the information gained from the knowledge exchange in the PLC group to develop a research proposal approach for young researchers at the Thailand National Sports University. It includes:

1) Approaches for self-development in knowledge, skills, and research experience:

- Seek constant knowledge expansion
- Create a research network with experts
- Create a research team
- Foster a positive attitude towards research work
- Clearly define research goals
- Develop technology media skills
- Practice mindfulness to enhance brain function

2) Approaches for preparing and conducting research projects:

- Study university policies or funding sources
- Identify research issues related to the researcher's expertise

- Research theories, principles, and related work on the problem topic
- Create a Concept Paper table to focus on the research's significant aspects, research goals, research methods, sample population/data collection and analysis

3) Approaches for writing a research proposal:

- Introduction and problem statement
- Research objectives are consistent with the background and statistics used in the study
- Research scope limits or frames the problem to highlight and outline the content to be studied
- Definition of specialized terminology is specific to the topic being researched
- Related documents and research work will provide a framework for research ideas
- Select research tools

4) Approaches for conducting research:

- Love and dedicate oneself to research work.
- Systematically prioritize work.
- Plan research work in a concise and budget-friendly manner.
- Strictly follow the planned work schedule.
- Create good relationships with the sample group.
- Build credibility, compassion, punctuality, and honesty.
- Focus on the research results before considering the budget.

5) Approaches for time management:

- Create a timeline for daily research work.
- Establish discipline in research work.
- Prioritize work.
- Evaluate the success of the work according to the timeline, along with finding ways to adjust the work plan for efficiency and achieving goals.

6) Approaches for creating a research atmosphere within the university:

- The university/campus organizes research platforms, conferences, training, seminars, praises and generates positive energy for researchers.
- Organize activities that promote learning and research work.
- Assign experienced researchers within the campus as mentors to new researchers.
- Establish a learning center and use Knowledge Management (KM) for research work.
- Provide convenient support facilities and personnel to assist with research work.

The objective of Clause 3 is to test the approaches for developing young researchers using PLC. Report on the exchange of knowledge meeting and observation of using PLC for developing young researchers at the Thailand National Sports University. The meeting was conducted using a 4-step participatory action planning approach. The steps were:

Planning: The young researchers used the development approaches from Phase 2 to plan their work to propose a research project by starting with studying the policy of the university and the funding source, and identifying the research problem in their expertise. They researched related theories, principles, and previous research works related to the research problem and prepared a Concept Paper focusing on the important issues of the proposed research. They presented the Concept Paper to experienced experts for consultation and advice on clarity, consistency, and research approaches.

Action: The young researchers created a research proposal by determining the title, analyzing the problem and its importance, defining the research objectives, the scope of the research, the specific terminology, the documents, and related research works. They presented the research methodology, identified the target group, specified the research tools and the methods for creating them, and determined the methods for collecting and analyzing data.

Observation: The young researchers observed the working practices and proceeded to develop a research

proposal. The young researchers formed groups of 2-3 people to exchange knowledge, ask questions, share ideas, and suggest techniques that each member found helpful in achieving the goal of successfully completing the research proposal. For example, techniques for information retrieval, voice typing, time management, and creating a working atmosphere for the research proposal were discussed. Based on these practices, the young researchers could successfully carry out the research proposal in 21 topics within the designated timeframe. The evaluation results of research proposals by new researchers in 21 topics ranged from 3.67 to 4.08, which was above the standard score of 3.51, equivalent to 100 percent.

Reflection: The young researchers reflected on the work process and identified the strengths and weaknesses of the research project development process. They also reflected on the effectiveness of the PLC process for their research development and suggested improvements for the process in the future.

Overall, the use of the PLC process for developing young researchers was effective and beneficial. It provided a structured approach for the researchers to plan, develop, and implement their research project while engaging in a community of practice. The process allowed for collaboration, consultation, and feedback from experienced experts and helped the young researchers develop their research skills and confidence.

The objective of Clause 4 is to design lessons learned from the success factors in developing young researchers using PLC. The report on the results of the knowledge exchange meeting on the decoding of the success factors of developing young researchers using the community learning process is based on an After Action Review (AAR) method, which reviews both the successes and problems that occurred during the work. Members reflect and review various processes to develop work efficiency and effectiveness. Using the 7-question framework, the questions are:

1) What are your expectations in joining the PLC group?
2) What exceeds your expectations in joining the PLC group?
3) What falls short of your expectations in joining the PLC group?
4) What are the success factors in joining the PLC group?
5) What are the obstacles to joining the PLC group?
6) If you join the PLC group again, what suggestions do you have?
7) Other things.

Success Factors from Participating in the PLC Group: This paper identifies key success factors that emerge from engagement in the PLC group.

Table 3. The success factors in developing young researchers using PLC

Key success factors	Descriptions
1. Collaborative Teamwork	Effective teamwork is a fundamental factor contributing to success within the PLC group.
2. Open-Mindedness and Knowledge Exchange	Participants foster an environment of openness, facilitating the exchange of ideas and knowledge. This active sharing promotes mutual learning and acceptance among group members.
3. Leveraging External Expertise	Utilizing external experts as consultants enriches the group's perspective and enhances the quality of discussions and outcomes.
4. Collective Insights through Group Feedback	Group discussions and feedback sessions provide diverse viewpoints, enriching the quality of insights and decisions.
5. Mindset Refinement	Members' commitment to producing high-quality research projects is influenced by mindset adjustments, fostering motivation, determination, and an understanding of the research's significance.
6. Administrative Support for Research Activities	Strong support from administrators facilitates the smooth execution of research activities and underscores their importance within the institution.

These success factors underscore the significance of collaborative and proactive engagement within the PLC group, leading to effective research outcomes and a culture of continuous improvement.

5. Discussion

I) Teachers at the Thailand National Sports University face research challenges related to support for research work, knowledge, skills, and experience. Successful research requires a research-promoting policy, aligned research plans, teacher ability to conduct research, sufficient budget allocation, convenient facilities, and an

efficient research management system. Factors such as team and administrative support, member competency, interest, cooperation, project manager skill, and top management support and cooperation are crucial for project success. Other studies suggest that lack of support and limited resources can hinder research completion. Researchers need to have the necessary skills, knowledge, and research experience to conduct research efficiently and produce high-quality outcomes that can attract funding and dissemination. They should also be able to analyze and summarize their findings for publication and wider utilization. (Phukhwan & Phensri, 2011; Bidyuk, 2014 ; Mahmood et al., 2014; Fongkanta, Buakanok, Netasit, & Kruaphung, 2022)

II) Utilizing the Thailand National Sports University PLC, a new generation of researchers can be cultivated through development methods that include knowledge self-development research skills, and experience such as research project preparation, research project proposal writing, research operations, and time management. This is achieved through a five-step process of utilizing PLC, which includes: 1) Creating common norms and values 2) Creating opportunities to communicate values, ideologies, visions, and practices that meet quality standards 3) Collaboration among professional community members, with a focus on working together as a team and providing open operation guidance and accepting suggestions from experts and PLC team members 4) A clear direction of action among members 5) A dialogue aimed at reflecting performance, reflecting plans, and practices through two-way communication and learning. This finding can be possibly explained by DuFour (2009). The development of collaboration between teachers with a focus on improving work abilities and ensuring that everyone can achieve their goals is the result of the PLC process, which has six basic characteristics: vision, mission, values, and common goals; team foundation learning; practicality; clear direction of action among members; continuous development of team learning; and predetermined outcomes for each learning team. One of the key goals of the Thailand National Sports University is to complete project proposals. Writing research project proposals is an important medium that aligns with the author's perspective. Since the author of the proposal cannot respond, it must rely on science and art to organize it rationally. While most project proposals are written in a clear format, time constraints can lead to issues with various topics, resulting in disconnected projects. Additionally, the importance of the title and question may not be consistent. To address these issues, researchers need to prepare information about modern topics of interest, utilizing the internet, relevant knowledge, and experience. Time management is a significant obstacle that prevents continuous research. Creating a research atmosphere on campus can stimulate young researchers to study. The method for cultivating a new generation of researchers is to establish a guidance system and motivate research. Research networks can be established within the organization, with statisticians helping to support researchers. By following these approaches, young researchers will have the support they need to achieve great success. (McIntyre & Cameron, 2011; Ambler, Harvey, & Cahir, 2016; Rysbek et al., 2022)

III) The results of using the university's PLC to develop young researchers were tested and it was found that there were 21 proposed research projects. The evaluation scores were in the range of 3.67 to 4.08, passing the evaluation standard of 3.51 (Chamnan, 2019) which is 100 percent. Examples of successful research projects from young researchers in the Thailand National Sports University; the results of the agility training program for futsal athletes, Innovation in improving biological efficiency using computer programs for golf swings to control the drop point distance, and Strategies for developing sports tourism in Sukhothai province. (Sukhothai is a province in the northern region of Thailand known for its rich history and cultural heritage. The province is also home to several natural attractions and is becoming increasingly popular as a destination for sports tourism.) This is because the development of young researchers resulted from the exchange of knowledge and learning from experts, qualified personnel, and new researchers, which was effective in gathering opinions through the PLC process and gaining knowledge to solve research problems. This was achieved by planning and implementing the five-step process, including 1) creating a common baseline and values to create opportunities for exchanging learning in values, mindset, and standardized quality practices; 2) working together to create quality development goals; 3) joining forces in a professional community to learn and develop work practices, help each other, and work together as a team; 4) accepting feedback and recommendations from experts, specialists, and team members; and 5) having discussions that reflect the results of work practices. Creating a shared vision, mission, and goals is a member-driven process that involves discussing and exchanging experiences to identify problems, needs, and readiness for action, leading to the creation of a shared vision, mission, and goals. This process helps community members to be involved in setting goals, leading to acceptance, understanding of the situation, and building good relationships with each other. These strategies have been previously discussed by experts such as Lunenburg (2010), Rodick (2013), Schaap and Bruijn (2018), Doğan and Adams (2018) and Slack (2019)

IV) The results of a lesson learned on the factors of success in developing young researchers using the Thailand

National Sports University's PLC showed that the factors of success from participating in the PLC group are teamwork, openness to exchanging and learning, accepting different perspectives within the group, fostering team learning in PLC, using qualified external networks as advisors, adjusting mindset, recognizing the importance of research projects, motivation for academic advancement, and management support for research work. This aligns with the conclusions drawn by Khanthap (2022), whose research delved into the Leader Characteristics influencing the Professional Learning Community. The investigation conducted by Jantakoon and Thanaphatchottiwat (2019) explored the influence of teachers on the design of learning activities within the context of a Professional Learning Community (PLC). Their study unveiled that teachers demonstrated a high level of proficiency in designing learning activities. This may be because the young researchers have gained knowledge, improved research skills, and have expectations of working efficiently on research projects with the support of management, colleagues, and supporting staff. Knowledge sharing from qualified external networks, creating a learning and research environment, having adequate resources for research, and creating an organizational culture with shared values, cooperation, and inspiration are factors that lead to success. Additional factors that affect the success of a professional learning community include leadership, organizational systems, structure, and management (Hord, 2003). To create a culture of success within an organization, it is necessary to use reflective feedback as a guide for improving and developing work. Leadership is the most important factor in creating and maintaining a professional learning community for staff. (Hallinger, 2003; Day & Sammons, 2013) In addition, important factors in developing researchers include providing mentoring, encouraging new researchers to participate in research projects with high-ability research project leaders, forming research teams in each discipline with research team leaders teaching research skill (Sengkhamkhoutlavong, Chayayond, & Chamraspun, 2014), establishing support units and research counseling, promoting continuous and regular research work, encouraging researchers to participate in academic seminars and disseminate research findings, encouraging teachers to join research networks, presenting research work at conferences, and organizing research expos. Finally, it is important to encourage teachers to incorporate research methods into the teaching and learning process, promote researcher exchange programs or joint research projects, and promote multi-disciplinary research projects.

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Obtained.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.