CHAPTER 4

Results of Data Analysis

The objectives of the research are (1) to study the context, needs for developing the competency for research conduction of the faculty of Physical Education Institute in the North, (2) to develop the model for developing the competency on research conduction of the faculty of Physical Education Institute in the North, and (3) to study the efficiency of the model for developing the competency on research conduction of faculty of Physical Education Institute in the North. In the presentation of the data analysis, the researcher will present the data analysis by dividing into the following steps.

Phase 1 General context of research conduction of the sample group of faculty of Physical Education Institute in the North.

1.1 Demographic data of the respondents of the questionnaires.

1.2 The context on research conduction of the faculty of Physical Education Institute in the North.

1.3 Context of the Physical Education Institute in the North through the process of SWOT Analysis.

1.4 The need for developing the competency on research conduction of the faculty of Physical Education Institute in the North.

1.5 Attitude toward the research conduction of the faculty of Physical Education Institute in the North.

1.6 The importance of developing the Model for developing the competency on the research conduction of the faculty of Physical Education Institute in the North.

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Phase 2 The model for developing competency for research conduction of Physical Education Institute in the North.

2.1 The importance and the needs for developing competency in research conduction of faculty of Physical Education Institute in the North.

2.2 The model for developing competency for research conduction of the faculty of Physical Education Institute in the North.

Phase 3 The result of studying the efficiency of the Model on developing competency for Physical Education Institute in the North.

3.1 The result of quality evaluation of the model for developing the competency of the research conduction of the faculty of Physical Education Institute in the North.

3.2 The efficiency of the Model for developing the competency for research conduction of the faculty of Physical Education Institute in the North.

Phase 1 The result of analyzing the context on the research conduction of the sample group of faculty of Physical Education Institute in the North.

1.1 The result of analyzing the demographic data of the sample group.

The researcher gathers the demographic data of the sample group of the faculty of Physical Education Institute in the North and analyzes the basic statistics of the variables on individual factors of the respondents of questionnaire as well as the frequency distribution, percentage of the respondents of the questionnaire according to the variables. The result is shown in Table 1 as the following.

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Table 4.1 Numbers and Percentage of the Demographic Data of the Sample Group

List	Number (People)	Percentage
Sex		
Male	59	57.84
Female	43	42.16
Age		
Below 30 years	9	8.82
30 - 40 years	20	19.61
41 - 50 years	25	24.51
above 50 years	48	47.06
Under Physical Education Institute		
Chiangmai Campus	30	29.41
Lampang Campus	20	19.61
Sukhothai Campus	29	28.43
Petchaboon Campus	23	22.55
Highest Education Level		
Bachelor degree	6	5.88
Master degree	88	86.27
Doctoral degree	8	7.84
Teaching experience		
Less than 5 years	9	8.82
5 - 10 years	11	10.78
11 – 20 years	28	27.45
More than 20 years	54	52.94
Experience in research		
No	46	45.10
Yes	56	54.90

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Table 4.1 (Continued)

List	Number (People)	Percentage
Instructional burden		
6 - 8 periods/week	5	4.90
9 - 11 periods/week	11	10.78
12 – 14 periods/week	23	22.55
15 - 17 periods/week	21	20.59
18 - 20 periods/week	18	17.65
More than 20 periods/week	24	23.53
Professional status		
Experienced teacher	24	23.53
Teachers of special expertise	28	27.45
Specialist teachers	3	2.94
Academic Standing Instructor	35	34.31
Assistant Professor	9	8.82
Associate Professor	3	2.94

Table 4.1 shows that most of the sample group who respond the questionnaire are over 50 years (or 47.06 percent) while the rest are below 30 years (or 8.82 percent). Most of them work under the Physical Education Institute, Chiangmai Campus (29.41 percent) while the rest is under the Physical Education Institute, Lampang Campus (19.61 percent). The majority of them had the educational level at Master degrees (87.27 percent) while small numbers had the Bachelor degrees (5.88 percent). Most of them have the teaching experience of over 20 years (52.94 percent) while only small numbers have the teaching experience below 5 years (8.82 percent). Most of them have experience in research conduction (57.90 percent). Most of them have the teaching burden more than 20 periods/weeks (23.53 percent) while the small numbers of them have the teaching burden between 6 and 8 period/weeks (4.90 percent). The majority of them have the professional status Teachers of special expertise (27.45 percent). Only a small number have the professional status of Specialist teachers (2.94 percent). The

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majority of them hold Instructor position (34.31 percent) and only a small number have the position of Associate Professor (2.94 percent).

1.2 The result of analysis of context on the research conduction of the faculty of Physical Education Institute in the North

The researcher gathers the data on the context that is related to the research conduction of the faculty of Physical Education Institute in the North. From the questionnaire and the analysis of the mean value ($\overline{X}$) and standard deviation (S.D) in each aspect. The results are shown in Tables 4.2 to 4.6.

Table 4.2 Means, Standard Deviation and Opinion Level of the Sample Group of the Faculty of Physical Education Institute in the North in the context of research conduction on the policy to promote research conduction

	List	$\overline{X}$	S.D.	Opinion Level
1.	Level of appropriateness of the activity to develop the competency in research conduction of the faculty	2.97	0.88	Moderate
2.	Level of appropriateness in developing the competency in research conduction of the faculty.	2.83	1.05	Moderate
3.	Level of appropriateness in encouraging the faculty to present their academic paper	2.86	1.12	Moderate
4.	Level of appropriateness in the compensation for the faculty in their academic publication to the public.	2.53	1.08	Moderate
5.	Level of appropriateness in complimenting the faculty with research work	2.56	1.10	Moderate
	Total	2.75	1.05	Moderate

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Table 4 . 2 shows that the sample group of the faculty of Physical Education Institute in the North express their opinion on the context on policy to promote research conduction as a whole picture in the Moderate level ($\overline{X}$ = 2.75). When considered per item, all items have the average value in moderate level with the values standing between 2.53 and 2.97.

Table 4.3 Means, Standard Deviation and Level of Opinion of the Sample Group of the Faculty in the Physical Education Institute in the North in the context of research conduction on the environment that supports the research conduction

	List	$\overline{X}$	S.D.	Level of opinion
1.	Level of appropriateness on the data sources.	2.53	0.92	Moderate
2.	Level of appropriateness of the organization that coordinate with researchers.	2.58	0.88	Moderate
3.	Level of appropriateness in allotting time for the faculty who conduct research.	2.58	1.03	Moderate
4.	Level of appropriateness of the experts on giving consultation in research conduction.	2.43	1.09	Moderate
5.	Level of appropriateness of the research network.	2.37	1.05	Little
	Total	2.50	0.99	Moderate

Table 4 . 3 shows that the sample group of the faculty of Physical Education Institute in the North express their opinion toward the context on the environment that support the research conduction as the whole picture in the Moderate level ($\overline{X}$ = 2.50). When considered per item, most of the items have the average value in the Moderate level except on the appropriateness of the experts for giving consultation in research

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conduction ($\overline{X}$ = 2.43) and the appropriateness of the research network ($\overline{X}$ = 2.37) with the average value in Little level.

Table 4.4 Means, Standard Deviation and the Level of Opinion of the Sample Group Faculty of Physical Education Institute in the North in the Context of Research Conduction, on the Faculty who Conduct Research.

List		$\overline{X}$	S.D.	Level of opinion
1.	Level of interest in research conduction of the faculty	2.76	1.07	Moderate
2.	Level of coordination in research conduction of the faculty.	2.65	0.99	Moderate
3.	Level of appropriateness in giving priority to research conduction	2.71	1.03	Moderate
4.	Level of interest in being new researchers	2.68	1.02	Moderate
	Total	2.70	1.03	Moderate

Table 4 . 4 shows that the sample group of the faculty of Physical Education Institute in the North express their opinion on the context on the faculty who conduct research as a whole picture in the moderate level ($\overline{X}$ = 2.7 0). When considered per item, all items have the average value in a Moderate level or between 2.65 and 2.76.

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Table 4.5: Means, Standard Deviation and Level of Opinion of the Sample Group Faculty at Physical Education Institute in the North in the Context of Research Conduction on the Amount of Research in the Campus

	List	$\overline{X}$	S.D.	Level of opinion
1.	Level of appropriateness on the ratio/amount of research work per number of faculty	2.41	1.06	Little
2.	Level of appropriateness on the amount of research work which get publication to the public in domestic and international levels	2.40	1.01	Little
3.	Level of appropriateness of the amount of research work that is presented in the academic conference in domestic and international levels	2.18	1.14	Little
4.	Level of appropriateness of the research work that can be applied beneficially	2.91	1.04	Moderate
5.	Level of appropriateness of the amount of research work that respond the identity development of the institute.	2.77	1.01	Moderate
	Total	2.53	1.05	Moderate

Table 4.5 shows that the sample group of the faculty of Physical Education Institute in the North express opinion on the context of amount of the existing research work in the campus as the whole picture in the Moderate level ($\overline{X}$ = 2.53). When considered per item, most of the items have the average value at Little level except on the level of appropriateness of the research work that is applied beneficially (2.91) and the level of appropriateness of the amount of research work that responds to the identified development of the institute (2.77) with the average value in the Moderate level.

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Table 4.6 Means, Standard Deviation and Opinion level of the faculty of Physical Education Institute in the North in the context that is related to the research conduction as the whole picture

	List	$\overline{X}$	S.D.	Level of Opinion
1.	On policy to promote the research conduction.	2.76	1.07	Moderate
2.	On the environment that supports research conduction.	2.50	0.99	Moderate
3.	On the faculty who conduct research.	2.70	1.03	Moderate
4.	On the amount of existing research work in the campus	2.53	1.05	Moderate
	Total	2.62	1.04	Moderate

Table 4.6 shows that the sample group the faculty of the Physical Education Institute in the North express opinion on the context as the whole picture in the moderate level ($\overline{X}$ = 2.62). When considered per aspect, all items have the average value in the Moderate level with the average values standing between 2.50 and 2.76.

1.2.1 Opinion on problems and obstacles of research conduction of the faculty of Physical Education Institute in the North.

For problems and obstacles in research conduction of the faculty of Physical Education Institute in the North, the researcher gathers information about the opinion through the open-ended questions. Then the researcher categorizes the data into groups and calculates the percentage. The result is shown in Table 4.7.

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Table 4.7 Number and percentage of opinion of the sample group of faculty of Physical Education Institute in the North on problems and obstacles in research conduction

Problem–Obstacle	Number (person)	Percentage (%)
On knowledge and skill		
- Lack of knowledge and skill	26	25.49
On promotion and support		
- Lack of support on developing the faculty in research conduction seriously, continuously and systematically.	61	59.80
- Lack of network for supporting research conduction	13	12.75
On work burden		
- The faculty has lots of work burden	33	32.35
On writing research article		
- Lack supports to develop the competency in writing up articles on research publication	37	36.27
On research publication		
- Lack publication on the information on publishing articles	18	17.65
- Unclear Policy/ budget	8	7.84
- Limited numbers of journals	6	5.88
On capitals		
- Physical Education Institute has not sufficient budget to support research	25	24.51

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Table 4.7 (Continued)

Problem–Obstacle	Number (person)	Percentage (%)
- External capital source that is hard to access	7	6.86
- Withdrawal of budget has complicated steps	6	5.88
- The data inquiry source that is not up to date and insufficient	5	4.90

Table 4.7 shows that the sample group of the faculty of the Physical Education Institute in the North who express their opinion on problems and obstacles in research conduction, on promotion and support of the issue in the institute, on lack of promotion for developing the faculty in research conduction seriously, continuously and systematically with the highest numbers (59.80 percent).

1.2.2 Attitude about the model that the faculty of Physical Education Institute in the North who get training on developing the competency for research conduction.

The attitude toward the model from the faculty of Physical Education Institute in the North who get training on developing the competency on research conduction is collected by the researcher through the open-ended questions, arranged data group and calculation of the percentage value. The result is shown in Table 4.8.

Table 4.8 Number and percentage of the sample group of faculty of Physical Education Institute in the North who get training on developing the competency on research conduction

Development Model	Number(person)	Percentage(%)
Training on knowledge	47	46.07
Workshop training	14	13.73

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Table 4.8 shows the number of the sample group of the faculty of Physical Education Institute in the North who express opinion on the Model. Most of them are trained to develop the model of training for knowledge development (46.07 percent).

1 .3 The context of Physical Education Institute in the North on the research process of SWOT Analysis

The context analysis of Physical Education Institute in the North on research conduction comes from the researcher's collecting suggestion from the open-ended questions on the problems and obstacles in research conduction to set into categories. Then the researcher analyzes the data with the process of SWOT Analysis. The implementation steps are as what follows.

1) Arrangement of the focus group discussion with the relevant people. These are the heads of researcher, Deputy Dean on research and some seven representatives of researcher from each of the campuses from the North Region group. The issue for the focus group discussion is the SWOT Analysis on research conduction for the faculty of Physical Education Institute in the North. It is composed of the internal factors issues which are strengths, weaknesses, and external factors which are opportunities and threats. After that the researcher evaluates the factors by using the four- rating scale in each of the issues. The criteria for scoring is shown as the followings (Fiscal Policy Office, 2007).

Importance	Strength and Opportunity	Weakness and Threats
Highest	4	1
High	3	2
Moderate	2	3
Little	1	4

2) Presentation of the result of SWOT Analysis on the internal factor system which are the strengths and weaknesses as well as the external factors which are

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opportunity and threats (obstacles) according to the situation of the Physical Education Institute in the North.

3) Chances for seven people in the focus group discussion to assign scores on the Weighted Score factor which are strength–weakness and opportunity–threats nexus that is important to the situation in the Physical Education Institute in the North on research conduction. The weighted scores of internal factors which are strength–weakness are equal to 1 and the weighted scores of external factors which are opportunity–threats are equal to 1.

4) Calculation of the weighted scores of the internal and external factor which are the strength-weakness and opportunity-threat to multiply with the average scores of the seven participants of the focus group discussion who express their opinion to calculate the end scores.

5) Calculation by the researcher to prioritize the real score from highest to the lowest before the calculation of the total scores by classifying the strength, weakness, opportunity and threats. The results are shown from Tables 4.9 to 4.10 as the followings.

Table 4.9 Results of analysis on the environment by the process of SWOT analysis on the context of Physical Education Institute in the North on strengths and weaknesses

Internal Factors Analysis : IFA Matrix-Key Internal Factors	Weight	Rating	Weighted Score	No.
Strengths				
1. Strong organizational culture on obeying the supervisors	0.19	3.75	0.71	1
2. Published journals ready for the publication of research work	0.12	3.83	0.46	2
3. Academic conferences in international level annually	0.09	3.58	0.32	3
4. Equipment/tools for sport science that is up to date	0.07	3.33	0.23	4
Total scores of Strengths			1.73	

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Table 4.9 (Continued)

Internal Factors Analysis : IFA Matrix-Key Internal Factors	Weight	Rating	Weighted Score	No.
Weaknesses				
1. Lack of support to develop the faculty in research conduction seriously and systematically	0.16	1.17	0.19	1
2. Lack of knowledge/skill in research conduction	0.14	1.00	0.14	2
3. Insufficient financial support to the research	0.09	1.33	0.12	3
4. The faculty have a lot of job burden	0.05	1.75	0.09	4
5. Lack of support to the development of article writing	0.04	1.92	0.08	5
6. Complicated hierarchy step of withdrawal of budget	0.03	2.00	0.06	6
7. Data resource is not up to date and sufficient	0.02	2.17	0.04	7
Total scores of Weaknesses			0.71	

Table 4.9 reveals that the Weighted Score which is composed of the total score of strength and weakness from the internal factor equals to $1.73 + 0.71$ (equal to 2.44). This score reveals that the Physical Education Institute in the North has quite many strengths which is considered as advantages. The institute is ready to develop the faculty's research conduction in the Physical Education Institute in the North so they can progress. For example, they have strong cultural organization on obeying the instructions of the supervisors. The institute has a journal for the research publication.

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There are some international academic conferences every year. The institute has new equipment/tools for sport science that are up to date. Anyway, there are still some weaknesses that urgently need attention: the weak promotion to develop the faculty's ability to conduct research seriously, continuously, and systematically, the lack in access to the development of knowledge and skill in research conduction, and little support on the budget for research and on the faculty who have a lot of burden.

Table 4.10 Result of analysis environment through the process of SWOT analysis on the context of Physical Education Institute in the North on opportunity and threats

External Factors Analysis : IFA Matrix-Key External Factors	Weight	Rating	Weighted Score	No.
Opportunities				
1. Civil Act for University Personnel (Instruction and Research)	0.22	3.50	0.77	1
2. Educational Quality Assurance that identifies qualified research work	0.17	4.00	0.68	2
3. Getting into the academic position of the faculty in the Higher Education Institution	0.08	3.17	0.25	3
4. National Education Act which identifies research conduction as part of instructional development	0.05	2.92	0.15	4
Total score of Opportunities			1.85	
Threats				
1. The research work published in academic journals is limited	0.13	1.50	0.20	1

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Table 4.10 (Continued)

External Factors Analysis : IFA Matrix-Key External Factors	Weight	Rating	Weighted Score	No.
2. Many educational quality assurance from ONESQA, OHEC and OPDC	0.14	1.33	0.19	2
3. No network for supporting research conduction	0.07	1.83	0.13	3
4. The floor or opportunity to present the research in domestic and overseas levels is limited	0.06	2.08	0.13	4
5. The access of external resource is limited	0.08	1.42	0.11	5
Total score of Threats			0.75	

Table 4.10 reveals that Weighted Score which is composed of the total score of opportunity and threats from the external factor equal to 1.85 + 0.75 (equal to 2.60). This score shows that the Physical Education Institute in the North can respond to the opportunity and can avoid the threats quite well. The institute can seek for benefits from the existing opportunity such as the role and responsibility of the faculty of Physical Education Institute who have to conduct research, to launch educational quality assurance which requires evaluation of the research, and to follow the Education Act which identifies research conduction. However, the Physical Education Institute do not overlook the issue on threats, things that need improvement, and other problems such as the publication of research work in academic journals, preparation for the quality assurance, creation of research network, and development of researchers to seek financial support from external sources.

In summary, the evaluation result of the context of the Physical Education Institute in the North on the research conduction with the process of SWOT Analysis appears as the followings.

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The study on the context of the Physical Education Institute in the North on the research conduction is done through studying the internal factors composed of strengths, weakness and external factors which compose of opportunity and threats and then bring that data to check the weight by seven experts. The scores from the weighing on the strength, weakness, opportunity and threats are calculated with Boston Matrix or Boston Consulting Group's Product Portfolio Matrix (Ekachai Boonyathidsathan, 2010). The results can be shown below.

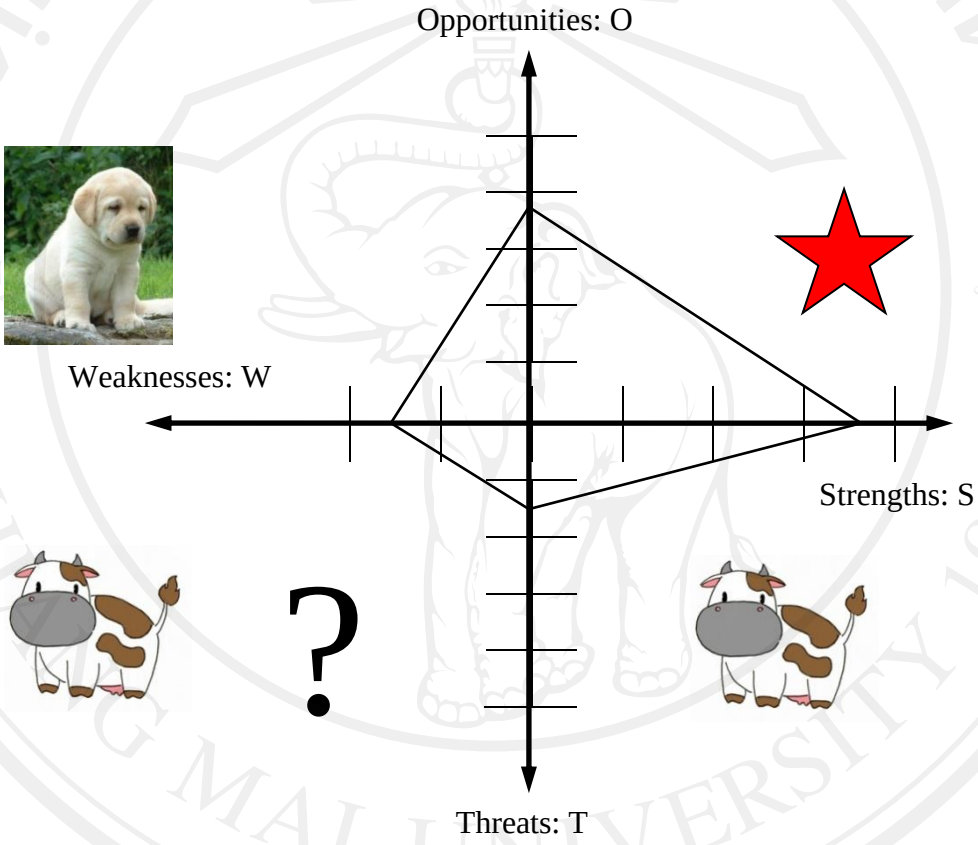

Figure 4.1 The evaluation result on the context of research conduction in Physical Education Institute in the North

The evaluation of the context of Physical Education Institute in the North on the research conduction reveals that the research situation of the Physical Education Institute in the position of SO Strategies. It is considered as the situation which can get advantage the most because it consists of external opportunity and the strength of the Physical Education Institute in the North. Or it may be called in short that is strategy of

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facilitating and strong. This is the Public Sector Star (Fiscal Policy Office, 2007). Such situation shows that the Physical Education Institute in the North have strengths as the guideline for developing competency for research conduction of faculty of Physical Education Institute which are strong organizational culture about obeying the supervisor, updated equipment and sport scientific tools, and research facilities, journals for research publication, and academic meetings at international level in every year. The analysis results on the external factor on the Physical Education Institute in the North open opportunity to facilitate and can avoid threats and weaknesses. It can seek for benefit quite a lot whenever there are opportunities: roles and responsibilities of the faculty of Physical Education Institute that must do the research, assurance that the educational quality must have evaluation on research, and the Educational Act that identifies the instructional development, the research process, the research on the standards of the higher education that needs to produce research work and academic positions of the faculty. However, Physical Education Institute do not overlook the issues on important threats and things to be improved and problems, for example, the journals to publish the research, preparation for quality assurance, creating network for research, and developing the researcher to be able to ask for support or fund from external sources. The situation and condition of Physical Education Institute in the North render them as having the situation that can gain the highest advantage because there are many opportunities from external sources and the strengths of physical educational institute themselves. From such data the researcher uses the strength and opportunities (SO Strategy) in the context of Physical Education Institute in the North to use as the guideline for developing the model for the competency development on research conduction of their faculty.

1.4 The results of evaluating the needs for developing competency for research conduction of the faculty of Physical Education Institute in the North

The evaluation of the needs is done by the research by considering the means and standard deviations of the expected levels of knowledge and skill on research conduction and the real levels. Afterwards, the researcher measures the conditions by comparing the means, standard deviation in Paired-Sample t-test of the expected and the real condition of the knowledge and skills in research conduction of the faculty. Then

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priorities will be decided by considering the values of Priority needs index ($PNI_{modified}$) from the improvement form, and in case that there is the equal values the important needs will be calculated from the value of Priority needs index (PNI). The results are shown in Tables 4.11 to 4.12.

Table 4.11 The need and priority on knowledge, expectation and current situation in research conduction of the sample group in the faculty of Physical Education Institute in the North

List	Expected		Authentic condition		t	Needs		
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		$PNI_{modified}$	PNI	Priority
1. Definition of research	4.20	0.89	3.30	0.82	9.55*	0.27	3.78	27
2. Type of research	4.11	0.90	3.26	0.89	9.15*	0.26	3.49	28
3. Steps of research	4.23	0.83	3.06	0.91	11.18*	0.38	4.95	10
4. Benefit of research	4.29	0.77	3.25	0.88	10.45*	0.32	4.46	19
5. Moral code of researcher	4.19	0.93	3.47	0.94	7.03*	0.21	3.02	29
6. Identification of research problem	4.25	0.87	3.08	0.88	12.76*	0.38	4.97	9
7. Writing up objectives	4.25	0.87	3.32	0.82	9.58*	0.28	3.95	23
8. Research assumption	4.24	0.92	3.32	0.90	9.44*	0.28	3.90	24
9. Area of research	4.23	0.82	3.10	0.92	10.84*	0.36	4.78	16
10. Definition of unique terms	4.22	0.87	3.01	0.92	12.32*	0.40	5.11	6
11. Related literature, Secondary data	4.21	0.93	3.08	0.93	11.26*	0.37	4.76	13
12. Benefits from studying secondary data and related literature	4.35	0.82	3.25	0.91	10.30*	0.34	4.79	18
13. Writing up the review of related literature	4.28	0.85	3.15	0.85	11.54*	0.36	4.84	15
14. Writing up reference of materials	4.39	0.81	3.27	0.91	10.79*	0.34	4.92	17

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Table 4.11 (Continued)

List	Expected		Authentic condition		t	Needs		
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		$PNI_{modified}$	PNI	Priority
15. Population used for research conduction	4.35	0.79	3.41	0.87	9.77*	0.28	4.09	22
16. Sample group in research	4.28	0.84	3.36	0.88	9.79*	0.27	3.94	26
17. Identification of sample group size	4.24	0.84	3.09	0.87	9.88*	0.37	4.88	12
18. Taking sampling for research	4.24	0.91	3.29	0.97	8.88*	0.29	4.03	21
19. Tools used in research	4.29	0.90	3.02	0.94	11.06*	0.42	5.45	5
20. Steps for constructing the tools	4.33	0.87	3.05	0.95	12.05*	0.42	5.54	4
21. Quality check of the tools	4.32	0.88	3.12	0.98	11.43*	0.38	5.18	8
22. Data collection	4.30	0.88	3.29	0.84	10.86*	0.31	4.31	20
23. Measurement level of the variables	4.32	0.97	3.18	0.78	11.60*	0.36	4.92	14
24. Statistics used for data analysis	4.26	0.89	3.06	0.88	12.32*	0.39	5.11	7
25. The data analysis with computer program	4.26	0.90	2.94	1.01	11.11*	0.45	5.62	3
26. Presentation of the data analysis	4.37	0.94	3.20	0.91	12.53*	0.37	5.11	11
27. Principle of writing up report	4.20	0.95	2.54	0.90	13.17*	0.65	6.97	1
28. Model for writing up report for journal publication	4.25	0.98	2.91	0.88	11.58*	0.46	5.74	2
29. Writing up bibliography	4.36	0.78	3.42	0.92	9.98*	0.27	4.10	25
Total	4.27	0.77	3.17	0.74	13.20*			

*$p < 0.05$

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Table 4.11 reveals that the average value of the knowledge on research conduction at present is lower than the expected average value of research conduction in every item. The comparison between the average expected knowledge value in research conduction and the authentic condition of the faculty of Physical Education Institute in the North shows that the whole picture and per item are different with statistically significance at the level of $p<.05$. Prioritizing the needs for developing abilities to conduct research of faculty in Physical Education Institute in the North on knowledge in research conduction reveals that the index value of prioritizing the importance of needs ($PNI_{modified}$) stands between 0.21 and 0.65. The highest top three priorities are "principle for report writing with ($PNI_{modified} = 0.65$), the "model for writing research report" ($PNI_{modified} = 0.46$), and "data analysis with the computer programs" ($PNI_{modified} = 0.45$).

Table 4.12 Prioritizing the need on knowledge in research conduction of the sample group of faculty of Physical Education Institute in the North

No.	List	Priority of Needs		
		$PNI_{modified}$	PNI	Priority no.
1	Principle of report writing	0.65	6.97	1
2	Model of writing up research report	0.46	5.74	2
3	Data analysis through the computer program	0.45	5.62	3
4	Steps for constructing research tools	0.42	5.54	4
5	Tools used for research	0.42	5.45	5
6	Definition of terms used	0.40	5.11	6
7	Statistics for data analysis	0.39	5.11	7
8	Quality check of the research tools	0.38	5.18	8
9	Identification of research problem	0.38	4.97	9
10	Steps for research	0.38	4.95	10
11	Presentation of results from data analysis	0.37	5.11	11

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Table 4.12 (Continued)

No.	List	Priority of Needs		
		$PNI_{modified}$	PNI	Priority no.
12	Identification of size of sample group in research	0.37	4.88	12
13	Secondary data and related literature	0.37	4.76	13
14	Measurement level of the variables	0.36	4.92	14
15	Writing up review of secondary data and related literature	0.36	4.84	15
16	Area of research	0.36	4.78	16
17	Writing up references	0.34	4.92	17
18	Benefit of studying secondary data and related literature	0.34	4.79	18
19	Benefit of research	0.32	4.46	19
20	Data collection for research	0.31	4.31	20
21	Taking sampling from sample group of research	0.29	4.03	21
22	Population used in research	0.28	4.09	22
23	Writing up objectives	0.28	3.95	23
24	Research assumption/hypothesis	0.28	3.90	24
25	Writing up the references	0.27	4.10	25
26	Sample group used in research	0.27	3.94	26
27	Definition of research	0.27	3.78	27
28	Type of research	0.26	3.49	28
29	Moral code/ethics of researcher	0.21	3.02	29

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Table 4.12 showed that the index value of priority of needs ($PNI_{modified}$) stands between 0.21 and 0.65. The items that are considered three of the highest priority are the "principle of writing up research report" ($PNI_{modified} = 0.65$), the "model for writing up the research report" ($PNI_{modified} = 0.46$) and "data analysis through computer program" ($PNI_{modified} = 0.45$). The listed items that are considered the least priority is the "ethics/moral code of conduct of researcher" ($PNI_{modified} = 0.21$).

1.5 The analysis result of attitude of faculty of Physical Education Institute in the North

The researcher gathers the data on the attitude in research conduction of the sample group of faculty of Physical Education Institute in the North. From the questionnaire and the analysis of the mean value ($\overline{X}$) and standard deviation (S.D.), the result is shown in Table 4.13.

Table 4.13 Mean, Standard Deviation, Level of Attitude toward research conduction of the sample group of faculty of Physical Education Institute in the North

No.	List	$\overline{X}$	S.D.	Level of attitude
1	Research work is an important mission of the faculty	4.06	1.01	High
2	Research work is an important mission as well as the instruction job	3.93	1.01	High
3	The faculty should conduct research for the application of developing the instructional process			
4	Research stimulates the faculty to think for the development approach for the development for instructional management efficiently	3.77	1.07	High
5	Research conduction is creating innovation for developing the subjects and society	4.02	0.92	High

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Table 4.13 (Continued)

No.	List	$\overline{X}$	S.D.	Level of attitude
6	Research conduction is the method to create academic wisdom and experience of the faculty	3.94	1.00	High
7	Reputation of the faculty in the research work	3.51	1.08	High
8	The academic excellence of the Higher Education Institute relies on the research conduction of the faculty	3.58	0.92	High
9	Research process is a mechanism to create human to have academic ability	3.96	0.93	High
10	Research conduction help creating the image of the faculty as the knowledgeable person	3.81	0.97	High
12	Research is the factor of progress in academic position	4.12	0.89	High
13	Main target of research conduction is more on the academic benefit than the compensation	4.03	1.04	High
14	The prosperity of each of the subjects relies on the research work of the faculty/instructors	3.97	1.05	High
15	The faculty admire friends who can conduct research	4.07	0.93	High
	Total	3.91	0.98	High

Table 4 . 1 3 shows that the sample group of the faculty of Physical Education Institute in the North have attitude toward research conduction as the whole picture in a high level ($\overline{X}$ =3.91). When considered per item, all items have average value in high levels that stand between 3.51 and 4.12.

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1.6 The importance and needs for development model for developing the ability of research conduction of the faculty of Physical Education Institute in the North

The focus group discussion on the model for developing competency for research conduction in general and from the studying of secondary data on personnel development reveals that the universities in Thailand highly prioritize the development of researchers because research conduction is a mission of the educational institutes in the Higher Education Level (Ministry Of Education, 2011). Research conduction is a mission of the faculty at the Higher Education Level that they all have to do (Ministry of Education, 2013). In addition, research is an indicator that can be checked by Office of National Education for Standard Quality Assurance (ONESQA) and Office of the Higher Education Commission. In such context, the universities must give importance to the development of the faculty on research conduction. The study on the context of the development of competency for research conduction shows that most of universities use the training as the driving force to develop competency on research conduction of the faculty by using the methods for developing the competency in research conduction as what follows.

1.6.1 Training to give knowledge on research conduction only.

1.6.2 Training to give knowledge on research conduction and to offer the implementation of training to create skill that trainees get real implementation during research implementation.

1.6.3 The training to give knowledge on research conduction which has the implementation training inside the training as well as the real research conduction but without monitoring to offer suggestions during research conduction.

1.6.4 Training to give knowledge on research with implementation training and real research conduction as well as advice for suggestion (advice during research conduction in form of a research clinic). The researcher seeks for advice when they face problems in research conduction.

The models of developing competency on research conduction show that Types 1 and Type 2 are the models of training with wide usage for developing competency on

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research conduction because the development process is convenience for implementation as part of the training. Types 3 and 4 have not been that popular and rarely used because the research conduction needs rather a long time with uncertainties for the period of time and needs to be completed quickly during a single fiscal year budget. Therefore, these requirements become obstacles to apply such model for developing competency in research conduction. The curriculum and contents used for the training have identified the responsible organizations or units in universities will be the persons or units to identifying curriculum and contents. The faculty will be the units who select the topics for the training because each of the universities have many faculty members that ease the universities from problem on the low number of trainees. The implementation of the past trainings showed that the production of research work is not sufficient and appropriate to the number of existing faculty in the universities, which is consistent with the evaluation of Office of National Education for Standard Quality Assurance (ONESQA, 2006) revealing that research conduction of the faculty in Thailand universities is limited: only 0.10 topic per faculty per year. A study of Sageemas Kwanmuang (2005: Abstract) revealed that the faculty at Higher Education Level produced the research work at merely 0.4 topics per faculty per year. The study of Office of Educational Committee Council (2008) shows that the faculty at the Higher Education Level do not sufficiently conduct research to develop their knowledge and potential for their professional development.

The Physical Education Institute might apply successfully the models that are used from the outside organization (Best Practice) in developing their researchers. In developing the researchers there are the models in neutral or central characteristics that train the organizers including for the budget for implementation, the identification of the curriculum for the training, and the identification of the contents and the training methods by inviting external trainers. The typical problem of the training is that after the training the faculty still fail to produce research works. The same faculty may attend trainings many times because no other faculty are interested to get training; the same faces appear many times. Because of the center provide the persons who are responsible for the expenses, the campuses send these persons to get training in order to preserve their rights. After the completion of training, no monitoring process is arranged for the trained researchers. This disturbed the implementation of development of the

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researchers of the Physical Education Institute in the past that was still not successful in developing researchers in terms of qualitative and quantitative. The evaluation results of the educational quality assurance in the third round show that the evaluation results in indicator number 5 on research or creative work that get publication or published to the public is in the quality criteria of "urgently need improvement" (Office of National Education for Standard Quality Assurance, 2 013). It is consistent with the evaluation report on the internal educational quality in the institute level which shows that a number of published research has the evaluation results in a low level (Physical Education Institute, 2 013). Such evaluation of the institute must have an improvement on the method to develop the competency of the researcher of the institute. The analysis of the model that is used for developing the researcher of the Physical Education Institute at present points that the Physical Education Institute arranged the training for developing research without asking for the needs and checking the knowledge of the participants of the training. It renders the contents used for the training to develop the researchers are not consistent and appropriate to the participants of the training. The selection of the training participants is based on the voluntary principle without any conditions on implemented research conduction after the training. Furthermore, the Physical Education Institute only promote and develop the knowledge with less support on other related factors as much as the institute should such as budget, support to promote researcher, monitoring process, supervision, and provision of advice and suggestion during research conduction. In addition, there is no agreement to produce research work after the completion of the training. There should also be a review on policy, promotion and development of research in order to respond to the context. The evaluation result on the context on the research conduction on Physical Education Institute in the North shows that that the faculty hold opinion in a moderate level. Such context points that effectiveness and efficiency in developing research conduction of faculty of Physical Education Institute in the North is not as successful as expected. The study of the context of Physical Education Institute reveals that each of the region will have four to five campuses of Physical Education Institute. From such context it is considered as the advantage of Physical Education Institute in developing a network system to give assistance, exchange knowledge, and share the learning for developing the researchers. It is consistent with the needs of the faculty of Physical Education

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Institute in the North that needs to have network to give assistance to the researchers. From the evaluation of the context of the Physical Education Institute in the North by using the process of SWOT Analysis, the researcher finds that research conduction in the context of Physical Education Institute in the North is in the position of SO Strategies. The situation is appropriate for development because it is composed of strength from inside which is composed of (1) strong organizational culture on obeying supervisors, (2) available journals for research publication, (3) the arrangement for academic meetings in international levels every year, and (4) the scattering of Physical Education Institute in the region. The opportunities from outside is composed of (1) the mission of the Higher Education that needs to produce research work, (2) roles and responsibilities of the faculty in Higher Education level that have to conduct research, (3) educational quality assurance which identifies that research work is indicator that needs to be evaluated, (4) the educational act identifies the conduct of research, and 5) regulation of improvement of the professional academic standing of the faculty of Physical Education Institute. In such context of the Physical Education Institute in the North it is considered to be the Public Sector Star which is appropriate for developing the competency for research conduction (Fiscal Policy Office, 2007).

From such data the researcher uses the data from the study on the context of research conduction to gather the data from surveys and the focus group discussion on the model for developing competency for research conduction. The data on the context of the Physical Education Institute in the North is analyzed with SWOT Analysis by using strength and opportunities (SO Strategy) in the context of Physical Education Institute in the North for developing the model for competency development on research conduction of the faculty of Physical Education Institute in the North that the development model is consistent and appropriate to the Physical Education Institute.

Phase 2 The Model to Develop Competency for Research Conduction of Faculty of Physical Education Institute in the North

The framework for developing the model for developing the competency in research conduction of faculty of Physical Education Institute in the North sets the results of study on data from many sources in making draft and developing the model for competency development in research conduction as the followings.

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1. The data from studying the context of the Physical Education Institute in the North about the research through surveys on the context points the following aspects: on the policy of promoting research conduction, on environment that facilitates research conduction, on personnel, on research conduction, and on amount of research work existing in the campuses. The analysis shows that the context of Physical Education Institute about the research on the opinion of the faculty as the whole picture and per item is in a moderate level. From such data the researcher will use as the data to develop the context in accordance with the research conduction to facilitate the constructed model for the faculty of Physical Education Institute in the North.

2. The data on studying the context about research conduction of Physical Education Institute in the North by using the process of SWOT Analysis. The study shows that the Physical Education Institute in the North have strength which will be used as the guideline for developing competency in research conduction as what follows. These strengths are strong organizational culture on obeying the supervisors, available journals for research publication, arranged academic conferences in international levels every year, some Physical Education Institute with many campuses scattering in the region, and opportunities for further development as what follows. These opportunities cover (1) the set mission of higher education to produce research work, (2) roles and responsibilities of the faculty in higher education level that must conduct research, (3) the educational quality assurance identifying the research work as indicator that needs to be evaluated, (4) the Educational Act demanding conduct of research, and (5) promotion or acceptance of academic positions for the faculty of Physical Education Institute. From these strengths and opportunities, the researcher utilizes as guideline for developing the model to develop competency for research conduction of faculty of Physical Education Institute in the North.

3. The data from studying the needs for developing competency on research conduction of the faculty of Physical Education Institute is gathered through using survey form to measure levels of knowledge and skill on research conduction of the faculty of Physical Education Institute in the North. The study reveals that the faculty of Physical Education Institute have the real needs to develop competency in research conduction. The index value of prioritized importance and needs ($PNI_{modified}$) is between

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0.21 and 0.65, and the data analysis shows that the average value of the knowledge and skill in research conduction at present is lower than the expected average value of knowledge and skill in research conduction in all items. When comparing the expected average value of knowledge and skill in research conduction and the real value of the faculty in physical education institution in the North, the researcher finds that as the whole picture and per item the differences appear with statistical significance at the level of $P<0.05$. From such data the researcher utilizes a basic preliminary data to develop the training kits so that the contents for the training are consistent with the context and the needs of the faculty of Physical Education Institute in the North.

4. The data from studying the model for developing competency on research conduction is collected through the use of survey form with open-ended questions and the focus group discussion. The findings show that the model that is used for developing competency for research conduction have the model that can be summarized as what follows.

(1) The training imparts knowledge only on research, (2) the training offers knowledge on research and training to create the skill but still without real implementation in research conduction, (3) the training gives knowledge on research with real implementation in the training and real research conduction but without monitoring to give advice or suggestion during research conduction, and (4) the training imparts knowledge on research with real training and real conduction of research added with advice consultation during research conduction in the research clinic. The researchers can come to the clinic and seek for advice when they face problem during research conduction. The development of research conduction training in the past proved that the production of research work was insufficient and inappropriate to the number of existing faculty, which was consistent with the evaluation of Office of National Evaluation Standards Quality Assessment (ONESQA). The data of the model to develop the competency in research conduction show that there are strengths and weaknesses in each model. The researcher bring such data to use as basic data in developing the model for developing competency in research conduction of the faculty of Physical Education Institute in the North to set its consistency with the context and appropriate to the needs of the faculty of Physical Education Institute in the North. After

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showing such a model to consult with the advisors, the researcher revises it based on the suggestions of the advisor. After that the researcher tests such model to seek for quality of the model by the experts and relevant people and revises it based on their discovery. The next step is to bring such model to test in the field to study the feasibility and appropriateness of the model. After that the model is tried into real tests to observe the efficiency of such model. This research presents the data from several sources to use for making draft and developing the model as shown in Table 4.14.

Table 4.14 Summary for sources of data in making draft of the model on developing the competency on research conduction of the faculty in Physical Education Institute in the North

Data source	Summary/Issues found	Drafting the model according to components
The context of Physical Education Institute in the North about research conduction through the survey by using questionnaire	The findings reveal the followings. 1. Faculty of Physical Education Institute in the North conduct very little research 2. The context of Physical Education Institute in the North do not facilitate research conduction as they should. It shows that the faculty express opinion about the context as the whole picture and per aspect in moderate level which are 2.1 On policy to promote research conduction. 2.2 On environment to support research conduction. 2.3 On personnel in research conduction. 2.4 On the amount of the existing research works in the campuses.	The Input Components Internal factors There is improvement on the context about research conduction of Physical Education Institute in the North in order to create context that facilitates and supports research conduction of faculty. The implementation is as the followings. 1. Creating the network to develop researchers in the North which is the organizations that support and promote researchers. 2. Identify the policies on research in order to support research conduction of the faculty

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Table 4.14 (Continued)

Data source	Summary/Issues found	Draft the model according to the components
The need for developing competency for research conduction of the faculty of Physical Education Institute in the North through survey	The findings show the followings. 1. The faculty in the institute have knowledge and skill on research conduction at present lower than the expectation. 2. The faculty of Physical Education Institute in the North have the need for developing competency for research conduction.	The Input Component Internal factors The results of the study brought to use as the data for implementation as what follows. 1 . Develop the training kit for developing knowledge and skill for research conduction for the faculty. Such training kits are consistent and appropriate to the context and the needs of the faculty of Physical Education Institute in the North. 2. Arrange training sessions for the faculty of Physical Education Institute in the North.
The context of Physical Education Institute in the North by the process of SWOT Analysis	The findings show that The situation of the Physical Education Institute on the research conduction shows that it is in the position of SO Strategies which is considered in the situation that is appropriate to the development because it is composed of the internal strength which are having strong organizational culture on obeying supervisors, have journals for research publication and arrange academic conference in the international level annually. For the external opportunity are the Civil Act for University Personnel to have responsibilities on teaching and conducting research. The instructional development through the research process, educational quality assurance that have evaluation on research work, including leading to academic positions to the faculty in Higher Education Institute which require the research work as part of the academic evaluation of academic work	The Input components External factors From the results of the study bring to use as the data for implementation as what follows. 1. To be the supporting factors to support the production of research work based on the mission of the Physical Education Institute in the North and it is the responsibility of the faculty in the Higher Education Institute. 2. To be reinforcement motivation in supporting research conduction which will lead to academic position of the faculty.

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Table 4.14 (Continued)

Data source	Summary/Issues found	Draft the model according to the components
The result of study on problems and threats to research conduction	The results of study show these. 1. Lack of promotion continuously and systematically. 2. Lack of network to support the research conduction. 3. No monitoring process to give advice, suggestion during research conduction.	The Process Components is the process to develop knowledge and skill for research conduction of the faculty.
The results of the study on the models used in the training to develop researchers	1) The model of the past training show that it lacks studying the context, lack data of faculty before the development. After the development lacks monitoring, give advice, suggestion during research conduction.	The results of the study on the models that are used in developing the competency for research conduction, problems and threats in research conduction, concept on arranging the training and the data on the need. The research brings such data to integrate to develop the model for the training arrangement to develop competency for research conduction of the faulty. The objective to make the developed model respond to the context and the needs of the faculty. Such development process is composed of three phases as what follows. 1. Planning phase is the process on preparation on training arrangement. To develop the knowledge, skill on research conduction for the faculty of Physical Education Institute in the North. 2. Training phase is the important phase of the model
The results of the study on the models used in the training to develop researchers The results of study on secondary data on the concept on training	From the analyzing of the concept on the training from secondary data it shows that the principle for arranging the training is composed of the steps as what follows. 1) The model of the past training show that it lacks studying the context, lack data of faculty before the development. After the development lacks monitoring, give advice, suggestion during research conduction. From the analyzing of the concept on the training from secondary data it shows that the principle for arranging the training is composed of the steps as what follows. 1) Analysis of the context 2) Identification of objectives of development	

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Table 4.14 (Continued)

Data source	Summary/Issues found	Draft the model according to the components
	3) Design and development of model 4) Implementation of model 5) Evaluate and monitor the result after the development	to develop the competency for research conduction. which are 1) the step on training. This step will be the step on development on the knowledge on research conduction through training process with the several techniques such as lecture, discussion, demonstration, etc It is composed of two steps.
Results of the study on secondary data on evaluating the learning. (Bloom B.S., et al. 1956)	Evaluation of the results of learning according to the concept of Bloom B.S., et al. (1956): the evaluation of the learning is composed of three aspects as what follows. 1) On knowledge (Cognitive Domain) 2) On attitude (Affective Domain) 3) on skill (Psychomotor Domain)	2) research conduction step. This step is the implementation of research conduction after the completion of the training this step will have monitoring, advising, suggesting to researcher during research conduction by experts from the network for developing the researchers in Physical Education Institute in the North. There will be three times of monitoring by the researcher. 3. Evaluation phase is monitoring the results of developing competency on research conductions that the developed model can achieve the objective or not. The evaluation will be done on three aspects according to the objectives of the learning as what follows. 1) On knowledge (Cognitive Domain) about the research of faculty in Physical Education Institute in the North by the use of achievement test form with four multiple choices (60 items) is the passing criteria of the training means they have knowledge for research conduction in above "good" level.

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Table 4.14 (Continued)

Data source	Summary/Issues found	Drafted model according to the components
		2) On attitude (Affective Domain) towards research conduction by using the attitude evaluation form, by using the self-assessment or evaluation form with multiple choice with 5-rating scale. The passing criteria of the training is to have attitude toward the research conduction in "a lot" or above level. 3) On skill (Psychomotor Domain) in research conduction by the use of quality evaluation form of the research in order to evaluate on the skill for research conduction of the faculty of Physical Education Institute in the North. The passing criteria of the training is to have skill on research conduction in the quality level of "moderate" level or above.
The results of studying secondary data on concept of Power Base of Tosi Rizzo and Carroll (1986)	Concept on Power Base of Tosi Rizzo and Carroll (1986). Such concept shows opinion that the power base has four kinds as the followings. 1. Power base on Reward Power 2. Power base on Coercive Power 3. Power base on Expert Power 4. Power base on Charismatic Power	Obeying the supervisors. This strength can be used as driven-mechanism by using the Power Base of Tosi Rizzo and Carroll (1986) to apply. It is composed of 1. Coercive Power. From the announcement of policy on developing researchers of Physical Education Institute it is identified that each campus must implement. Such concept drives the subordinates to perform according to the policy. 2. Charismatic Power according to the policy of high administrators who have unique characteristics which is called "Charisma" that can transfer the positive feeling to the subordinates to implement accordingly responding to the strength of Physical Education Institute on obeying the supervisors. 3. Reward Power is ability of administrators to give reward to subordinates for the success of the work and it is believed that the performance or implementation will lead to reward. This method of raising salary, wage, promotion for ranks or position or complimentary words. Such concept is a part of reinforcement and motivation in implementation according to the policy.

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2.1 The priorities and needs for developing competency for research conduction of faculty in Physical Education Institute in the North

The study on secondary data on developing personnel and the focus group discussion on developing competency on research conduction points that the competency on research conduction is a qualification which is considered as an important competency. It should be developed among the personnel in all professional fields especially the educational personnel. The more people behave competently on research conduction, the more they know how to analyze systematically. It leads to the academic development that helps discovery of knowledge and solution of problems systematically, and the process can be checked for its correctness according to the academic principles. The competency of researcher is composed of knowledge, attitude and skill in conducting research. From the reform of learning that emphasizes on the learners it is necessary for the teachers to develop themselves to be professional teachers. It relies on the research process as the base and the guideline for developing the learners to their full potential systematically and reliably. Teachers must get support to have knowledge and understanding to bring research process to use in developing the researchers. In developing the instructional methods efficiently the teachers must adjust the training methods, change the teaching methods, and reform the testing methods in accordance with the National Education Act in BE 2542/1999 in Paragraph 4 Sections 24 and 30 that emphasize on research conduction. It is identified that the teachers must conduct research to develop the instruction by using the research process as the tools for instructional arrangement (Office of National Education Commission, 2002) and in accordance with the Civil Act for University Personnel 2002 and its amendment in 2008 in Section 18 (civil servants in the Higher Education Institute have duties on teaching and researching). Research conduction is a mission of Physical Education Institute that must implement the research (Physical Education Institute, 2013) and research is a mission of the higher education institute (Office of Higher Education Commission, 2010). The results of evaluation on the second round of external quality assurance of Physical Education Institute by Office of National Educational Standard Quality Assurance (ONESQA) found that the whole picture of the institute and in the level of campus research conduction is in a very limited number compared to the existing number of personnel. ONESQA also found that the average budget per personnel is

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very low (Physical Education Institute, 2011). The evaluation result from the external educational quality in the third round showed that the research work or creative work that get published is in the quality criteria of "urgently need improvement" (Office for National Education Standards and Quality Assessment, 2013). This report is consistent with the report of internal educational quality in the evaluation at the institute level which shows that the number of research that get published have the evaluation result in a "low" level (Physical Education Institute, 2013).

Such evaluation drives the Physical Education Institute to adjust the guideline for developing competency on research conduction of the faculty of Physical Education Institute in the North. From the past implementation, the results appeared as unsuccessful. Therefore there is a need to develop a competency of research conduction to run smoothly, continuously, and efficiently and to set a successful implementation of the institute on the research conduction according to the mission of the Physical Education Institute (Physical Education Institute, 2005). This development must follow the duty of the institute in higher education level (Ministry of Education, 2011). It is the responsibility of the faculty or instructors in higher education institute to conduct research (Ministry of Education, 2002). It will influence the evaluation of educational quality. Besides, the competency on research conduction is an important competency which will be the indicator for academic excellence of the educational institute in the higher education level (Conrad and Blackburn, 1985; Saruda Chaisuwan, 2007). It is consistent with the strategy of production and development of human force in Thailand during the educational reform in the second decade between 2009 and 2018 (Office of the Education Council, 2011) and to enhance the quality levels of the faculty which will reinforce educational strength to be ready for sustainable development of the country.

2.2 The model for developing the competency of research conduction of the faculty of Physical Education Institute in the North

In developing the research conduction of the faculty of Physical Education Institute in the North, the researcher develops a model to use as a guideline for developing the competency on research conduction which is composed of three

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components: (1) Input component, (2) Process component, and (3) Driven Mechanics component. The details of each component are given below.

Input component

The input component is related to resources which must be used in the implementation according to the model for developing competency of research conduction of the faculty of Physical Education Institute. It is composed of the input component which can be both internal and external. The details are as the followings.

1. Internal factor is composed of network, policy of network, context of Physical Education Institute in the North, training kit. The details are shown below.

1.1 The network to develop researchers of Physical Education Institute in the North. The study on the context of Physical Education Institute in the North on research conduction found that the existing context does not facilitate the research conduction. The faculty understand the problems and seek for assistance in similar form. Therefore, creating a network is the guideline to solve such problem. It is consistent with the data that comes from studies on the context of the network for developing researchers of Physical Education Institute in the North which have the components as the followings.

1.1.1 Common Perception: Physical Education Institute that belong to the network must have the feeling, thought, and common perception on the reasons to participate in the network such as the problems of producing the research work of the faculty. Such problems bring them understanding on the problem and awareness to solve the problem together and build experience in the common problem. They have needs to get help from institutions with similar characters. The results appear that the members of the network feel attachment to the implementation of common activities to solve the problems

1.1.2 Common Vision: Common vision is seeing the picture of the future objective together among the members of the group in solving the problems of producing research work of the faculty of Physical Education Institute. According to the perception and understanding to the shared direction and target to move together, they

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will be driving the movement to be strong force in unity to ease the conflicts that may come from different perceptions and thoughts. Although sharing a common vision is something that takes time to create, but it is necessary to create.

1.1.3 Mutual Interests/Benefits: The network comes from each of the members who have their own personal needs but those needs cannot be achieved if each of the members separate. This definition makes the gathering on the base of shared or mutual interests/benefits must be high enough to attract the members to gather into a network. Therefore gathering to be a network must be based on mutual interests/benefits that is a need to create researchers for the institute.

1.1.4 All stakeholders' participation among network members: Participation of each of the Physical Education Institute in the network is very important process for developing the strength of the network because the process has participation from all parties in the network. It is the conditions to create participation in knowing, thinking, deciding, and acting. Therefore the status of members in the network should be equally important as "partner" of the network. It is the relationship in horizontal line which is equal among the campuses.

1.1.5 Complementary Relationship: The component which make the network implement continuously is to allow the members of the network to supplement the relationship to one another. The strength of one member will solve the weaknesses of the other member. It creates benefits from gathering into network.

1.1.6 Interdependence: Because of the limitation of each institute in the network on resources, knowledge, capital, human force, etc, the members of the network cannot subsist on their own. In achieving the common target, the members are necessarily relying among themselves in the network. So they complement one another. It interweaves the members of the network together.

1.1.7 Interaction: The interaction inside the network is important and necessary. Therefore the members of the network need to do activities together in order to create interaction among the members such as holding the meeting to monitor the implementation on the development of the researchers, the problematic conditions that

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occur from the development of the researchers or the discussion, the exchanging of opinions or arranged seminar activities together in the facing problem. Such interaction will be the interexchange relationship among them. The more they interact with one another, the more they feel attachment among the members.

In the early period of establishment of the network for developing researchers of Physical Education Institute in the North, Lampang campus was the host. The Deputy Dean of Physical Education Institute Lampang campus was the chairperson of the researchers, and the researcher was the secretary in the implementation of activities of the network. For example, the activities involved development project of researchers in Physical Education Institute in the North and the appointment of the network committee which was composed of the committee in policy level and the committee for implementation level.

1.2 The network policy on developing the researchers of Physical Education Institute in the North.

To set the implementation of the network to develop the researchers of Physical Education Institute in the North in the same direction and target, the policy of the network should be identified. The researcher consults and asks for advice on the policy regarding policy as guidelines for supporting and promoting the development of researchers. It becomes the background or the source of policy of the network to develop researchers of Physical Education Institute in the North. The policy is as what follows.

Policy on research of the network to develop researchers in the North

1) To promote research conduction that is consistent with the need on the physical education, recreation sports, sports science, health science, other related fields, and the direction of the research of the country and institutes in order to be academic excellence in international level.

2) To develop potential for the researchers of the institute that they have quality at international level.

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3) To promote and support the publication of research work and the useful application in domestic and international levels.

4) To encourage coordination in research with the network in domestic and oversea arenas.

5) To promote and support facilitation the system information technology and other resources that the research work have quality.

6) To promote and support research conduction of the institute especially the relevant organizations.

Measurement

1) Hold the trainings and give advice to the faculty in order to enhance the skill and reinforce motivation and positive attitude toward research conduction.

2) Allot the financial fund of the institute and the campuses including other funding sources in domestic and overseas to promote research.

3) Supply the equipment and tools and other facilities to support research conduction.

4) Develop the organization and the managing system including the implementation system of the faculty to facilitate the production of research work.

5) Develop libraries, information technology system and database to be used as the up to date source of study.

6) Develop the network and supports to make connection or linkage operation, exchange of experience in research between the personnel in each faculty and other institutes in domestic and overseas.

7) Develop, apply publication on the knowledge in order to be useful for society in form of academic service and maintenance of arts and culture.

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1.3 The results of studying the context of Physical Education Institute in the North on research through the process of SWOT Analysis are given as the followings.

Strengths

1) The strong organizational culture on obeying the supervisors.

2) Equipment and tools for sports science that are up to date and modern.

3) Journals for research publication.

4) Academic meetings in the international levels annually.

Weaknesses

1) Lack of support to develop faculty to conduct research seriously, continuously and systematically.

2) Lack of knowledge and skills for research conduction.

3) Limited research support or budget.

4) The faculty have a lot of burdens.

5) Lack of promotion to develop the writing of articles.

6) The withdrawal of budget has complicated steps.

7) The source for data search is not up to date and insufficient.

Opportunities

1) The Civil Act for University Personnel of 2 004 and its amendment of 2 008 Section 1 8 identifying that civil servants in higher education institute are responsible for teaching and research.

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2) The educational quality assurance which is identified in research work will be the indicator to be evaluated.

3) Entering into academic positions of the faculty in higher education institute.

4) The National Education Act in 1999 Paragraph 4 Sections 2 4 and 30 identifying that the teachers must conduct research for developing instructions.

Threats

1) The research that gets published in journals is limited.

2) The educational quality assurance work are many such as Office for National Education Standard for Quality Assurance (ONESQA), Office of the Higher Education Commission (OHEC) and Office of the Civil Service Commission.

3) No network that supports research conduction.

4) The floor to present research work in domestic and overseas are limited.

5) Accessing the external resource funds is difficult.

1.4 The training kit. The researcher sets the development of training kits that the researcher following the data from studying the needs in developing competency on research conduction of faculty of Physical Education Institute in the North on knowledge, skill of expectation, and the real condition of the faculty to be used as guideline for developing the contents for the training arrangement. In the development of training kits, the researcher uses the concept of developing a curriculum of Taba H. (1962) to apply for developing the training kits for the competency on research conduction of the faculty of Physical Education Institute in the North. Implementation steps are done as the followings.

1.4.1 Survey the need for development or need on knowledge, expected and measured skills on research conduction of faculty of Physical Education

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Institute in the North to analyze the gap, weakness, and background of the faculty. It is the systematic evaluation to identify the differences or the results (Outcome Gaps) between the condition that seems to be and the real condition at present and then to prioritize the importance of the needs in order to find the real needs to solve the problems.

1.4.2 Identify objectives or targets. The researcher identifies the objectives of developing the curriculum to develop competency on research conduction of the Physical Education Institute in the North so it will be consistent with the needs of the faculty and the context of Physical Education Institute in the North.

1.4.3 Select the contents. The researcher selects the contents through studying the data from the results of the survey on the need for developing. Selecting the contents is done in order to be consistent with identified objectives.

1.4.4 Prioritize content arrangement and the content order to be appropriate for the researcher based on the content order following the methodology.

1.4.5 Select the learning experience. The researcher, along with the trainers, identifies activities or identify the method to make the trainees learn the identified contents and make it consistent with the nature of the content such as lecturing, discussion, demonstration and practice.

1.4.6 Arrange the learning experience. Arrange the order of the experience. Arrange the order of the learning activities. The researcher arranges the order of learning experience according to the research methodology.

1.4.7 Evaluation and the evaluation method. The researcher considered the achievement of the objective of the training kit through the evaluation method based on the concept of Bloom B.S., et al. (1956) who classified the learning objectives into three following aspects.

1) On knowledge or Cognitive Domain which is the behavior of the brain or intellectual/wisdom, knowledge, thinking, intelligence, and ability to think

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about things efficiently. It is the intellectual ability. The researcher uses the test to evaluate the knowledge on research conduction.

2) On attitude or Affective Domain is the psychological behavior on the value, feeling, appreciation, attitude, belief, moral interest, and interest on research conduction. The researcher will use the evaluation form to evaluate the attitude or Affective Domain.

3) On skill or Psychomotor Domain is the behavior that indicates the ability to perform the task efficiently and the quality of the performance will indicate the skill level. The researcher will use the evaluation form to evaluate the research result to evaluate the skill in research conduction.

The training kit is composed of some seven learning units to be used in the training on the competency for research conduction of the faculty of Physical Education Institute in the North. Such training kit was checked for its quality and showed the quality level in High Level ($\overline{X} = 4.03$, S.D. = 0.73) with the needs value ($PNI_{modified}$) standing between 0.21 and 0.65. Such training kit in each unit is composed of indication, topic, learning objectives, teaching media and training, methods for measuring and evaluation, and the pre-test and post-test measurements. The details of each learning unit are given as the followings.

Learning Unit 1 Concept of the research

Learning Unit 2 Introduction of the research

Learning Unit 3 Review of related literature

Learning Unit 4 Population and sample group

Learning Unit 5 Tools used in the research

Learning Unit 6 Data Analysis in research

Learning Unit 7 Writing up research report

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The tools that are used for evaluating the competency for research conduction of the faculty of Physical Education Institute are composed of the followings.

1 . The learning achievement test to evaluate the Cognitive Domain or the knowledge on research conduction of the faculty of Physical Education Institute in the North. The test has four multiple choices (with 60 items). The validity of the learning achievement test is checked to show that the Index of Congruence (IOC) is between 0.80 and 1.00. The analysis of Difficulty level and the discrimination power is done with the analysis of using simple formula with the 27% Technique. The result of data analysis after the consideration on the Discrimination power is applied through the test per item. From the check of difficulty level (P) of the achievement test, it shows that it has the value between 0.22 and 0.74 and the value of discrimination power (r) is between 0.21 and 0.72. The check on the Reliability of the learning achievement of the test by using the method to Measure of internal consistency with the KR-20 method reveals the reliability standing at 0.77. The criteria for passing the training is having the knowledge on research conduction in "Good" level or above.

The criteria for interpreting the score to evaluate the knowledge on research conduction are shown as the followings (Stufflebeam, 2006).

Some 93 percent or correct 56 items or more Excellent

Some 68 - 92 percent or correct 41 - 55 items Very Good

Some 50 - 67 percent or correct 30 - 40 items Good

Some 25 - 49 percent or correct 15 – 29 items Moderate

Below 25 percent or correct below 15 items Low

2 . The evaluation form on attitude or Affective Domain toward the research conduction of the faculty of Physical Education Institute in the North is the self-evaluation form with multiple choice with five rating scale. The check on validity of both of the questionnaires shows that the IOC is standing between 0.80 and 1.00 and the Reliability measured by Cronbach's Alpha Coefficient equals to 0.95. The criteria for passing the training is to have the attitude in "High" level or above.

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The criteria for interpreting the result of score on the attitude toward the research are given as the following (Boonchom Sri-sa-ard, 2002: 160-162).

Average value between 4.50 and 5.00 have positive attitude toward research conduction in the Highest level

Average value between 3.50 and 4.49 have positive attitude toward research conduction in the High level

Average value between 2.50 and 3.49 have positive attitude toward research conduction in the Moderate level

Average value between 1.50 and 2.49 have positive attitude toward research conduction in the Low level

Average value between 1.00 and 1.49 have positive attitude toward research conduction in the least level

The evaluation form on the quality of research report to evaluate the skill or Psychomotor Domain on the research conduction of the faculty of Physical Education Institute in the North. The passing criteria of the training is to have skill on research conduction in the quality level of Moderate level or above.

The criteria for evaluation is given as the followings (Office of the Education Council (2009).

The evaluation score between 3.21 and 4.00 means High quality

The evaluation score between 2.41 and 3.20 means Relatively high quality

The evaluation score between 0.81 and 1.60 means Relatively low quality

The evaluation score below 0.80 means Low quality

2 . External factors are those that influence the development of competency in research conduction of the faculty of Physical Education Institute in the North because research conduction is the duty of the faculty in the Higher Education Level. It is the set

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of laws which promulgates that the faculty at the Higher Education Level must conduct research. They are composed of the National Education Act in 1999 and its Amendments (2nd revision) in 2002 and (3rd revision) in 2010, the Civil Act for University Personnel in the Higher Education Institute of 2004 and its Amendment in 2008, and the quality assurance system in Higher Education standard according to Section 34 in the National Education Act of 1999 and its revision in the National Education Act (2nd revision) in 2002 on the entering to the academic positions of the faculty in the Higher Education Level. The details are shown as the followings.

2.1 National Education Act in 1999 and Amendment (2nd revision) in 2002 and (3rd revision) in 2010 in Section 24 (5) stated about the promoting the supports to instructors to arrange the learning climate, environment, learning media and facilities that help the learners to learn and have knowledge, including ability to use research as part of the learning process. Section 30 identifies that the educational institutes develop the instructional process efficiently, including promoting the instructors to conduct research in order to develop the learning that is appropriate to the learners in each of the educational levels (Office of National Education Commission, 2002).

2.2 The Civil Act for University Personnel in 2004 and its amendment in 2008 in Section 18 identifies the position of civil servants in Higher Education institute to have duty on teaching and conducting research. And Section 19 states that the civil servants in the Higher Education level who have the academic standing as Professor or Deputy Professor (who completed the doctoral degree or equivalent), whenever the persons reach 60 years of age at the end of the fiscal year they can continue to serve the government officer to do teaching job or conducting research further until the end of fiscal year that the persons reach 65 years of age. The extension of government service according to the 1st paragraph is in accordance to the methods and conditions as identified by the Civil Service Commission.

2.3 The National Education Act in 1999, additional amendment (2nd revision) in 2002 identifies the objectives and the principle of the educational management that aim to focus on quality and standards. The detail is stated in Paragraph 6 on the standard and educational quality assurance which is composed of "the internal

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quality assurance system" and "the external quality assurance system" to be used as the mechanism to maintain the quality and standard of the Higher Education Level. Research is an indicator that needs to be evaluated in various dimensions.

2.4 The Higher Education standard according to Section 3 4 in the National Education Act in 1999 which has additional revision by the National Education Act (2nd revision) in 2002 identifying that the Higher Education Committee proposed the higher education standard that is consistent with the needs of the National Economic and Social Development Plan by considering on the independence and academic excellence of the Higher Education Institute at Graduate Level. According to the law and related laws regarding the establishment of the educational institutes in each place, the High Education Committee identified the standard for implementing the mission of the Higher Education institutes. It is composed of sub-standards on four aspects: (1) on the production of graduates, (2) on research conduction, (3) on providing academic service to society, and (4) on maintenance of arts and culture. With regard to the research conduction in the Higher Education level, it must have the implementation on the mission on research conduction with quality, efficiency and under the specific emphasis. The implementation must follow the policy, budget and have the management that facilitates the support for the faculty, researchers, and personnel to have competency for research conduction. To promote and create the network of research conduction with the organizations outside the institutes to get the research work and creative work with quality, they must have usefulness and respond to the strategy for developing the country. The strategy must respond to the need of the society widely and create benefits for the public.

2.5 Entering to the academic positions for the faculty in the higher education level according to the announcement of the Civil Service Commission in Higher Education on the criteria and method for considering the appointment of personnel to have the title of assistant professor, associate professor and professor (Book no. 10) in 2013 on the criteria and the method for considering the appointment of personnel to have the title of assistant professor, associate professor and professor by identifying the research work as Type 1 of academic work that can be used for adjusting the academic position according to the criteria identified by the Civil Service

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Commission in Higher Education. Research work is not included as part of education to get degree or any certificate.

Process Components

The model to build competency of research conduction of faulty of Physical Education Institute in the North has the process to implement according to the model. The process is divided into three phases as what followings.

Planning Phase

Training Phase

Evaluation Phase

The details are given as the followings.

1. Planning Phase is the process on preparation before the training. The planning phase is composed of what shown below.

1.1 To seek consultation with the Dean on the guideline to develop the researchers of Physical Education Institute in the North to use the data for developing competency for research conduction of faculty of education institute.

1.2 Via the network for developing researchers of Physical Education Institute in the North to be the coordinating organization of Physical Education Institute in the North in developing competency for research conduction for the faculty.

1.3 Identify the guideline for policy of network to develop researchers of Physical Education Institute in the North to be used as a guideline for promoting, supporting, and developing competency for research conduction of the faculty.

1.4 Prepare the letters to inform the Dean of Physical Education Institute as the Chairperson of advisory committee and the Deputy Dean to seek for advice to allow the higher administrator to know about the implementation and monitoring on the results of development further.

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1.5 Appoint the committee for the network of developing researchers of education institute in the North to appoint the committee to be responsible for implementation for developing competency on research conduction of the faculty of Physical Education Institute in the North.

1.6 Asking for approval on the project for developing competency on research conduction of faculty of physical education in the North to implement to develop the competency on research conduction of the faculty of Physical Education Institute in the North.

1.7 Holding meetings of the committee to prepare the readiness for developing competency on research conduction of faculty of education institute in the North.

1.8 Preparing the letter to inform the Deputy Dean of Physical Education Institute in the North and invite the sample groups to participate in the training or the people who are willing to get the training on developing competency on research conduction.

1.9 Preparing invitation letters for the trainers.

1.10 Preparing the materials for the training, training kits, visual audio equipment, computers, projectors.

1.11 Preparing the venues of the training. The place for the training is the conference Room 1 second floor of the faculty of sports science and health, Physical Education Institute, Lampang Campus.

2. Training Phase process (divided into two phases)

2.1 The knowledge development phase is the process of giving knowledge to the participants of the training through the methods and several techniques that are used in the training. The selection of the technique and methods for the training will be done appropriately to the contents in each topic because the use of appropriate techniques for the training can help creating the learning and changes which are knowledge, attitude, and skill of the participants to achieve the objectives. The selection of the technique of the training must consider on the objective of the training project if

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it wants to create changes or knowledge, attitude, or skill or three aspects at the same time. Therefore, the selection of techniques and methods must be appropriate to the objective and must be consistent with the contents. This training (Chuchai Smitikrai 2 013, Somkid Bangmo 2 011, Petcharee Rupavijetra 2 013) along with the model to competency on research conduction of faculty of Physical Education Institute in the North is the model which selects the samples with a purposive random sampling of the people who are willing and need to develop their competency in research conduction. Such sample group is considered the sample group who have positive attitude toward research. This attitude influences the learning from training (Surang Kowtrakul, 2 009; Kesorn Kunamai, 2006; Boonyaluk Tumnanchit, 2009).

The training process uses the technique for the training differently depending on the contents and objectives of the learning. The technique that is used for training to develop competency on research conduction of the Physical Education Institute in the North utilizes several techniques as the followings.

Lecture

This method uses the process for transferring the contents on opinion, knowledge, data, or facts to the listeners. It is a technique widely used and combined with other techniques although it has a weakness that the lecture is using a one-way communication system. If the time is limited the opportunity for the listeners to participate in questioning or showing opinion on the topics of the lecture will be very little. The lecturer cannot estimate that after the completion of lecture if the listeners have knowledge or understanding on what the lecturers have been describing or not.

Discussion

This is the process of individual groups who have attitude to consider on certain topics, consultation, expressed opinion to solve existing problem, or to exchange knowledge, opinion, transferring experience to let others know. Finally there is a decision to be made together.

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Demonstration

This is the process through which the participants of training observe the real implementation or the practice/real action which is similar to the teaching. The demonstration is often used in the courses that need implementation such as training on using the computer program for data analysis.

Coaching

This way is the process to suggest the implementation methods correctly. Normally it is done in coaching or training sessions during the implementation. It can be done individually or in small groups. The teachers or trainers must have experience and skills on the topics, the methods, on choosing the head who teach the training to others.

Brainstorming

This is the process of small group meeting and opening the chances for everyone to express opinion freely without limitations or rules on any topics or any problems. Without considering on the wrong or rights, good or bad, opinion or suggestion will be recorded and synthesized. Therefore, when the meeting starts, there will be selection of chairperson, secretary of group, and the methods. The participants of training can express their opinions and summarize them together.

Case Study

This method is the process of training that brings the stories or real cases that become problems and really happen to be presented to the groups of participants. The members of group will use the academic principles and experience from their implementation and then integrate them with analysis of the cases. There will be advisors to advise and provide guidelines to help the group members to analyze the problems in response to the objective. The steps of study will start with the principles and pictures that are useful for consideration to solve the problems. Afterwards, the participants can discuss and study the cases using the academic principle. Sometimes the data can be ready-made data but sometimes it needs to search for more additional data, but at the end the participants of training must make decision to solve the problem.

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In case that case brings the presentation under similar phenomena, the case can help making decisions among the participants.

Table 4.15 The learning objectives and process technique in learning arrangement

Learning Objectives	Process Techniques
On Knowledge	Use technique of lecture, discussion, demonstration, training, brainstorming and study from manual/materials
On Attitude	Use technique of discussion, brainstorming, and case study
On Skill	Use technique of training phase, demonstration, coaching, participatory training

2.2 The research conduction phase is the training to develop competency on research conduction of faculty of Physical Education Institute in the North. The researcher identifies the guideline for monitoring and evaluation of research conduction of the faculty after the training in three phases in order to monitor the progress in research conduction and give advice and consultation to researchers by monitoring the researchers. During the monitoring phase the researcher will be the time for giving consultation advice to researchers through the processes according to the appropriateness. This time beside developing the knowledge the training also develops attitude (Surang Kowtrakul, 2 009; Chuchai Smitikrai, 2013; Somkid Bangmo, 2011; Petcharee Rupavijetra, 2011), and the study of the context shows that the faculty of Physical Education Institute in the North have a need on consultation and advice during the research conduction after the training. The monitoring of the researchers after the completion of training will be divided into three phases as the followings.

Phase 1: The researcher checks on the title, background and importance of problems, research questions, research objectives, definitions, the written review of literature, and research conceptual framework.

Phase 2: The researcher evaluates the tool construction, improves the quality of tools, checks sample group size, selects the sample groups, and decides the statistics used for data analysis.

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Phase 3: The researcher evaluates data analysis and writes research report. The time gap of each of the phases of monitoring the researcher in each campus will be different according to the readiness condition. The identified Phase 1 lasts in duration of one month after the training. Phases 2 and 3 will be adjusted according the appropriateness in the process of the learning process of the researchers from their self-study research conduction and the supervision process by the experts/coaches through the learning process of the researcher and the monitoring process of the experts through several techniques as what follows.

The learning process of the researcher is the process that occurs while the researchers conduct research. In such process the researchers create the learning from conducting the research through the learning to the use of learning process as what follows.

Self-Directed Learning (SDL)

This is the learning process that centers around the researchers as the central figure. It is the learning by oneself according to one's interests, needs, and skills. There is the research conduction as the complete target. The researcher knows how to seek for the learning resources, selects the research methods, including evaluates the progress of self-directed learning. The researchers implement by themselves or coordinate the project with help from others.

Participatory Learning (PL)

This is the method that opens opportunity for the researchers to participate in expressing opinion. The learning occurs when the researchers participate in the activity from the start because it allows the researcher self-discovery, understanding the needs, and be aware of their own ability levels. It will stimulate the participation more in the learning activities because the researchers learn to understand the needs and stay aware of their own ability levels.

Authentic Learning (AL)

This learning occurs around real condition (Authentic Learning) because the situation will be the real research. It will emphasize the learning on the real practices.

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The training for research conduction after the training improves the researchers' analytical thinking, problem-solving skill, and skills related to research conduction by themselves.

Cooperative Learning (CL)

This is the learning where the learners exchange opinion, help one another and be responsible for their own work and the work of the members of the group because the sample group in each campus will be around 1 to 3 researchers. Therefore, the researchers can employ such process of learning to conduct research.

The supervision process of researchers by the experts and coaches is the process that has objectives to assist researchers. This process has several techniques to help researchers in using any technique that will be depended on the situation of each researcher. For example,

Consultant and Guidance

The experts/coaches will give consultation, advice or guidance and give useful information that result to research conduction. For example, the experts offer consultation and guidance for studying data, finding data sources, or suggesting the alternative for research conduction.

Coaching/Preceptor Method

This is the process that has coach/preceptor to be responsible for teaching, transferring knowledge and training skill on research conduction for the researchers. This process is including stimulating and supporting researchers to develop their research continuously. Such process will help the research to have positive attitude toward research conduction.

Control, Monitoring, and Formative Evaluation

During the research conduction there should be control, monitoring and formative evaluation on research conduction that the implementation of research is in accordance

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with the plan including the learning evaluation and behavior in order to be feedback data for the development on research conduction.

3 . Evaluation Phase is the phase for evaluating the effectiveness of the development through the evaluation based on the objective according to the concept of Bloom B.S., et al. (1956) with the following evaluation.

3.1 On Knowledge (Cognitive Domain) This is the behavior in the brain aspect which is the behavior on the intellectual, knowledge, opinion, wit, and ability to think about things efficiently. It is the intellectual ability that the researcher uses the test form to evaluate the knowledge on research conduction through the comparison of the score result of pre- and post-test after the training. Then the scores are compared to the criteria through the test after the training after the completion and then after submission of the research report because the implementation of research conduction makes the researchers can learn from their practices (Harrow, 1 9 7 2 ; Simpson, 1 9 7 2 ; Fitts, 1964; Surang Kowtrakul, 2009; Chuchai Smitikrai, 2013; Somkid Bangmo, 2011; Petcharee Rupavijetra, 2 011). The passing criteria is to have knowledge on the research conduction in a "Good" level or above.

The criteria to evaluate the knowledge (Stufflebeam, 2006) are as the followings.

93 percent or correct 56 items or more Excellent

68 - 92 percent or correct 41 - 55 items Very good

50 - 67 percent or correct 30 - 40 items Good

25 - 49 percent or correct 15 – 29 items Fair

Lower than 25 percent or correct less than 15 items Low

3.2 On attitude (Affective Domain) This is the psychological behavior on values, feelings, appreciation, attitudes, beliefs, interests, morality and preference on research conduction. The researcher uses the evaluation form to evaluate affective domain/attitude by comparing the attitude toward the research before and after submitting the research reports and then compare with the criteria by using the

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evaluation form of attitude with the multiple choice to allow the researchers to evaluate themselves. In developing the attitude toward the research, such model will use the monitoring process to give consultation, suggestion, guidance, and the methods differently based on appropriateness to the researchers so the researchers feel positive toward the research. It influences the attitude toward research conduction (Surang Kowtrakul, 2009; Kesorn Kunamai, 2006; Boonyaluk Tumnanchit, 2009). The criteria to pass the training is to have an attitude in a "high" level or above.

The criteria for interpreting the scores on attitude toward the research is as the followings (Boonchom Srisa-ard, 2002: 160-162).

Average 4.50 – 5.00 Have positive attitude toward research conduction at Highest level.

Average 3.50 – 4.49 Have positive attitude toward research conduction at High level

Average 2.50 – 3.49 Have positive attitude toward research conduction at Moderate level

Average 1.50 – 2.49 Have positive attitude toward research conduction at Low level.

Average 1.00 – 1.49 Have positive attitude toward research conduction at Lowest level.

3.3 On skill or psychomotor (Psychomotor Domain) This is the behavior that indicates ability to perform the work efficiently, and the quality of work is the index of the level of skills. The researcher uses evaluation form to evaluate research work quality to evaluate the skill on research conduction. In the developed model the researcher can conduct research after the training. There is the monitoring process to assist giving consultation for the researchers. It is the process of real training in research conduction. It influences the development of skills in research conduction (Harrow, 1972; Simpson, 1972; Fitts, 1964; Surang Kowtrakul, 2009; Chuchai Smitikrai, 2013; Somkid Bangmo, 2011; Petcharee Rupavijetra, 2011). For the passing criteria of the training is to have skill on research conduction at the quality level of "moderate" level or above.

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The criteria for evaluating the research report is as what follows (Office of Educational Committee Council, 2009).

Evaluation scores between 3.21 and 4.00 means high quality

Evaluation scores between 2.41 and 3.20 means relatively high quality

Evaluation scores between 1.61 and 2.40 means moderate quality

Evaluation scores between 0.81 and 1.60 means relatively low quality

Evaluation scores lower than 0.80 means low quality

The Driven Mechanics Components

This is the driven mechanics of the model that leads to implementation. It is an important step that will move the functioning of all mechanisms to achieve the set targets so that the relevant people have the feeling of participation. It will rely on the process and mechanism to reinforce in several dimensions in coordinating the implementation plan, financial plan, and labor plan in driving and coordinating the organization together in same direction to the set objectives of organization. The success of the driven mechanics model to success is important. The researcher brings the result of study on the context on Physical Education Institute in the North from the SWOT Analysis on the Strengths and Opportunities and then integrate them with the concept of Power Base to use as the driven-mechanics model. From the study on the concept of Power Base it shows that the Power Base of Tosi Rizzo and Carroll (1986) is appropriate and responsive to the context of Physical Education Institute in the North. The researcher brings such concepts to apply for driven mechanics the model to develop competency of research conduction of the faculty of Physical Education Institute in the North. The driven mechanics of the model lead to the implementation which is important step which will drive all the functioning of mechanics to achieve the results as the set targets. To make the relevant people have the feeling of participation, it must rely on the process and mechanisms to integrate the reinforcement in several dimensions in coordinating the implementation plan, financial plan and human plan in driving the organization together, interwoven and in the direction to lead to the

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objective of the organization. The success of driving the driven mechanics of the model should lead to success. From the evaluation results of both internal educational quality and external on research conduction, the findings show that the evaluation results is in the "low" level and "urgently need improvement" (Office of ONESQA, 2013; Physical Education Institute, 2 013) . Such condition of Physical Education Institute needs to readjust the attitude on developing competency of researchers. From the past development is still not responsive to the objective of the development. The analysis of situation of Physical Education Institute through the research process of SWOT Analysis reveals that the situation in the Physical Education Institute is appropriate for the development because it is full of external opportunities which are composed of (1) the mission of the higher education institute that need to produce research works, (2) the roles and duties of faculty in higher education levels that must conduct research, (3) the educational quality assurance that identifies the research work as indicator that need to be checked, (4) the Educational Act identifies conduct research, and (5) the trend to prioritize research work and from the internal strength. This last part is composed of (1) strong organizational culture on obeying supervisors, (2) journals for research publication, and (3) academic meeting at international levels annually. From such context, the Physical Education Institute in the North is considering having the situation which facilitates the development or Public Sector Star (Fiscal Policy Office, 2007). In developing the competency in research conduction, the researcher brings strength of Physical Education Institute which are strong organizational culture on obeying supervisors to be the driven mechanics. Then the researcher brings it as mechanics for driving the development through strength of Physical Education Institute integrated with the concept of Power Base of Tosi Rizzo and Carroll (1 9 86) . The researcher brings such concept in the following manners.

1. Coercive Power Base. This step starts from establishing the network for developing researchers in the North and announcing the policy on the measurement on developing the researchers of Physical Education Institute in the North. Each of the campuses is allowed to implement and report the evaluation results. From such concept it makes the subordinates follow the policy which is consistent with the strength of the Physical Education Institute in the North on having strong organizational culture on obeying the supervisors. From following the implementation of such policy, it creates strategic plan to response to such

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policy and create implementation plan, project, budget for implementation in response to such policy. The Coercive Power base is the starting moving mechanism important for developing competency on research conduction of faculty of Physical Education Institute. Such model includes the trouble of physical education institution which face the problem on producing research work according to the mission of the institutes. It add the causes to get response from the policy on developing research conduction of the faculty of Physical Education Institute in the North.

2. Charismatic Power Base. According to the policy of the high administrator this base has unique characteristics which is called "Charisma." It can transfer the feeling to the subordinates to follow the implementation which is consistent with the strength of Physical Education Institute on having strong organizational culture. In this step the researcher uses the moving step for implementation according to the policy on developing competency on research conduction of faculty in Physical Education Institute in the North. The moving step will attract the faculty to attend the training to develop competency on research conduction and produce research works after the completion of the training. Everyone who participates in the training must conduct research. Such step is important because making the trainees to conduct research after the training is an important agreement which will influence to number of the participants of training. Therefore, Charismatic Power base from the higher level of administrators is an important driven mechanics in such step.

3. Reward Power base is ability of the administrators to give rewards to subordinates to the achievement of the work, and it is believed that following such implementation will lead to rewards through the methods of raising salaries, wages, promotion of ranks, promotion of positions, or get complimentary words. Such concept is part of reinforcement and incentives to perform according to policies. In this step the driven mechanics appear in form of complimentary words, important duties as the reason for promotion of salary or ranks, compliments through certificates to participants of training and production of research work, and certificates to the Deputy Deans as the person who support and promote the production of new researchers. In such issues it can respond to the educational quality assurance on the mechanism to support and develop researchers.

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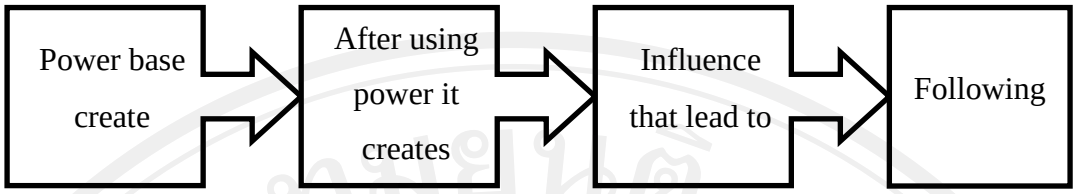

Figure 4.2 The power use in form of relationship
Source: Tosi Rizzo and Carroll, 1986: 508.

In order to make the process for driving movement for developing the model for developing competency in research conduction of the faculty of Physical Education Institute in the North, the researcher sets up a network for developing researcher for Physical Education Institute in the North. The Dean is the chairperson and agrees on the principle on the policy for developing researchers that the researcher has proposed. The Deputy Deans of each campus are the vice chairperson. Because the Dean is the highest administrator of the Physical Education Institute, the announcement on policy about the guideline for developing researchers can make the other developing processes respond to and create/drive movement for developing researchers based on the concept of Power Base. As stated above, the model for developing competency of research conduction which the researcher proposes comes in the right time that the development process for developing researcher gets good cooperation. In addition, the concept of the Power Base is also used to drive the movement and take part to allow the Physical Education Institute to implement according the mission of the institute efficiently. The faculty can conduct research in accordance with the role and responsibility of the faculty in the Higher Education Level. The institute can bring the research result of the faculty which respond to the educational quality assurance on the issue of research work and creative work. It is consistent with the strategy of production and developing the human force in Thailand. During the educational reform in second decade between 2009 and 2018 (Office of the Education Council, 2011) which is consistent with the vision for 2016 of the Office of the Higher Education. This vision states that "Higher Education is a knowledge source and the development of the human labor in high level which have quality for sustainable development for the country." It creates the life-long learning according to The National Economic and Social Development Plan, Book no. 11 (2012-

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2016) based on the self-sufficient economy play roles in the ASEAN social community and leads to the quality of higher education in the international level (Office of the Higher Education Commission or OHEC, 2013). It also enhances the quality level of the faculty and strengthens the educational strength in respond to the sustainable development of the country.

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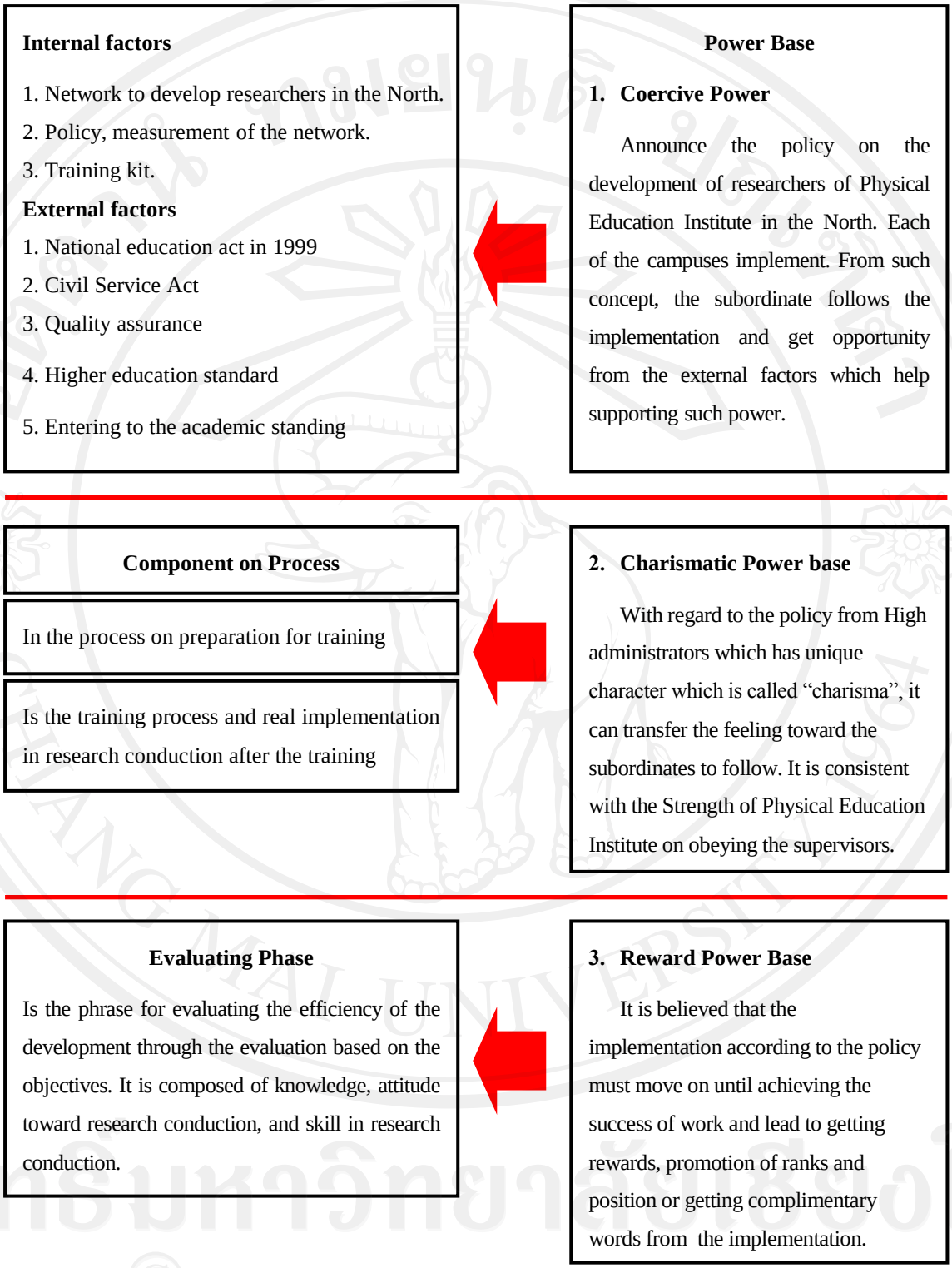

Figure 4.3 The model for developing the competency for research conduction of the faculty of Physical Education Institute in the North

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The condition for success under the concept of Power Base

High Administrator: The Deans have some roles like the followings.

1 . To monitor the progress of the implementation of the project to develop the researcher of the Physical Education Institute in the North. The schedule for reporting the progress of the project is done regularly every month until the completion of the project.

2 . To support and promote the research conduction in various forms such as supporting the budget for research development and supporting the additional budget for the campuses that have the best research work.

3. To offer reward to the researchers who produce the best research according to the identification of the institute. The reward is given on the establishment anniversary day of the Physical Education Institute every year and also given to the administrators as the supporters of the development of researchers according to the criteria identified by the institute.

Administrators in Regional level. The chairperson of implementation committee, Deputy Dean of Physical Education Institute, Lampang Campus, Chiangmai Campus, Sukhothai Campus and Petchaboon Campus play important roles as the followings.

1 . Reporting the progress on the project for developing the researcher of Physical Education Institute in the North every month to the Dean in the central meeting. The reports will be presented as the whole picture of the North. Then the Deputy Dean of Lampang Campus as the chairperson of the implementation committee and the Deputy Dean of Chiangmai Campus, Sukhothai Campus and Petchaboon Campus report the progress of the researchers under their institutes.

2 . Monitoring the progress of the researchers in the project for developing researcher in the Physical Education Institute in the North. The progress report will be done every month by the Deputy Dean on research unit will be the person who does the report verbally in the monthly meeting at the regional level.

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Administrator in middle level: Assistant Dean for research division in each campus plays an important role which are the followings.

1 . Reporting the progress, summarizing the problems and threats/obstacles, and suggesting improvement in research conduction of the faculty of Physical Education Institute in the campus to the Deputy Dean of the campus.

2 . Holding meetings for the researchers in the campus in order to monitor the progress, problems, and threats or obstacles in research conduction.

Administrator in operational level: Head of research unit in each campus plays an important role which are as the followings.

1. Supervising, monitoring, consulting, and advising the researchers.

2 . Reporting the progress, summarizing the problems, threats or obstacles and suggesting improvement in research conduction of the faculty to the Assistant Dean on research division.

Phase 3 The Result of Studying the Efficiency of the Model for Developing Competency for Research Conduction of the Faculty of Physical Education Institute in the North

Such steps follow the study steps as the followings.

Part 3.1 The result of quality evaluation of the model for developing competency for research conduction of the faculty of Physical Education Institute in the North.

The researcher gathers the data on evaluating the quality of the model for developing competency for research conduction of the faculty of Physical Education Institute in the North from the questionnaire and analysis through study on the means ($\overline{X}$) and standard deviation (S.D.) in each of aspects. The result is displayed from Tables 4.16 to 4.22.

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Table 4.16 Means, standard deviation of opinion toward the quality of the model for developing the competency for research conduction on the feasibility of the model

	List	$\overline{X}$	S.D.	Quality level
1.	The model has feasibility in real implementation in the Physical Education Institute in the North.	4.13	0.78	High
2.	The model has feasibility in constructing the cooperation among relevant people.	4.09	0.69	High
3.	The model has feasibility on allotting the resources to support the implementation.	4.17	0.68	High
	Total	4.13	0.72	High

Table 4.16 shows that the quality of the model for developing the competency for research conduction of the faculty of Physical Education Institute in the North on the feasibility of the model in the whole picture has the quality level in "High" level ($\overline{X}$ = 4.13). When considered per item, it is shown that all items have the quality in "High" level with the average values standing between 4.09 and 4.17.

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Table 4.17 Means, standard deviation of the opinion of the model for developing the competency on research conduction on the appropriateness of the model

	List	$\overline{X}$	S.D.	Quality level
1.	The model has appropriateness to the context of the Physical Education Institute in the North.	4.20	.58	High
2.	The model has appropriateness to the basic ability of the faculty of Physical Education Institute in the North	3.93	0.74	High
3.	The model is appropriate to the guideline for educational reform.	3.98	0.77	High
4.	The model is appropriate to the guideline for educational quality assurance.	4.13	0.75	High
5.	The model is appropriateness to the development of professional skill for the faculty of Physical Education Institute in the North	3.87	0.65	High
	Total	4.02	0.70	High

Table 4.17 shows that the quality of the model for developing competency for research conduction of the faculty of Physical Education Institute in the North on the appropriateness of the model in the whole picture has the quality level in “High” level ($\overline{X}$ = 4.02). When analyzed per item, the result shows that all items have quality level in “High” level with the average values standing between 3.87 and 4.20.

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Table 4.18 Means, standard deviation of the opinion of the model for developing the competency on research conduction on the Adequacy Aspect of the model

	List	$\overline{X}$	S.D.	Quality level
1.	The target of the model is sufficient for developing the faculty of Physical Education Institute in the North.	4.20	0.65	High
2.	The factors identified in the Model that are sufficient for the implementation.	3.74	0.71	High
3.	The content for developing the faculty as identified in the Model is sufficient for developing the faculty of Physical Education Institute in the North.	3.93	0.65	High
4.	The method used for implementation is sufficient for developing the competency of the faculty of Physical Education Institute in the North.	3.80	0.65	High
5.	The supervision, monitoring and evaluation as identified in the Model are sufficient for checking the implementation quality.	3.89	0.80	High
	Total	3.91	0.69	High

Table 4.18 shows that the quality of the model for developing the competency for research conduction of the faculty of Physical Education Institute in the North on adequacy as the whole picture is in "High" level ($\overline{X}$ =3.91) . When considered per items, the results show that all items have the quality in "High" level with the average scores between 3.74 and 4.20.

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Table 4.19 Means, standard deviation of the opinion toward the quality of the model for developing the competency on research conduction on the utility

	List	$\overline{X}$	S.D.	Quality level
1.	The model is useful for the development of faculty of Physical Education Institute in the North.	3.85	0.73	High
2.	The model is useful for the development of learners' quality.	4.26	0.71	High
3.	The implementation according to the Model is used as the supporting data for educational quality assurance.	4.15	0.67	High
	Total	4.09	0.70	High

Table 4.19 shows that the quality of the model for developing the competency for research conduction of the faculty of Physical Education Institute in the North on the utility as the whole picture has the quality level in "High" level ($\overline{X}$ = 4.09) . When considered per item, the results show that all items have the quality level in "High" level with the average values between 3.85 and 4.26.

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Table 4.20 Means, standard deviation of the opinion towards the quality of the model for developing the competency on research conduction on the agreement

	List	$\overline{X}$	S.D.	Quality level
1.	The stakeholders see the opportunity and agree on the principle of the Model.	3.96	0.73	High
2.	The stakeholders see the opportunity and agree on the target of the Model.	4.11	0.79	High
3.	The stakeholders see the opportunity and agree on the implementation according to the model.	3.78	0.73	High
	Total	3.91	0.75	High

Table 4.20 shows that the quality of the model for developing the competency for research conduction of the faculty of Physical Education Institute in the North on the agreement as the whole picture has the quality level in "High" level ($\overline{X}$ = 3.91). When considered per item, the results show that all items have quality level in high level with the average values registering between 3.78 and 4.11.

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Table 4.21 Means, standard deviation of the opinion towards the quality of the model for developing competency for research conduction on the aspect of propriety

	List	$\overline{X}$	S.D.	Quality level
1.	The implementation according to the model help promoting listening opinion of the faculty, administrators and relevant people.	3.83	0.74	High
2.	The implementation according to the model helps promoting responsibility of the faculty and administrators in developing the educational quality.	3.93	0.83	High
3.	The implementation according to the model helps encouraging on devotion for common benefits.	3.87	0.75	High
4.	The implementation according to the model helps promoting hospitality among faculty in job performance.	4.17	0.71	High
	Total	4.05	0.45	High

Table 4.21 shows that the quality level of the model for developing competency for research conduction of the faculty of Physical Education Institute in the North on propriety as the whole picture has the quality level in "High" level ($\overline{X}$ = 4.05) and when considered per item. All items are in the quality level of High and have the average value of between 3.83 and 4.17.

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Table 4.22 Means, standard deviation of the opinion towards the quality of the model for Developing competency for research conduction in whole picture

	List	$\overline{X}$	S.D.	Quality level
1.	On feasibility of the model	4.19	0.72	High
2.	On appropriateness of the model	4.02	0.70	High
3.	On adequacy of the model	3.95	0.69	High
4.	On utility	4.13	0.70	High
5.	On agreement	3.91	0.75	High
6.	On propriety	3.95	0.76	High
	Total	4.03	0.72	High

Table 4.22 shows that the quality of the model for developing the competency on research conduction of the faculty in Physical Education Institute in the North as the whole is in the quality level of "High" ($\overline{X}$ = 4.03). When considered per item, all items have the quality level in High level and the average scores are standing between 3.91 and 4.19.

Step 3.2 The efficiency of the Model for developing the competency for research conduction of the faculty of Physical Education Institute in the North.

The researcher studies the efficiency of the Model for developing the competency for research conduction of the faculty of Physical Education Institute in the North on three aspects which are the knowledge on research conduction, the attitude toward research and the skill on research conduction. The result is shown in Tables 4.23 to 4.25.

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Table 4.23 Comparison of the mean and standard deviation of scores of pre-test and post-test of the training

Test	n	$\overline{X}$	S.D.	Wilcoxon Value	Wilcoxon Prob	Criteria
Pre-test	9	24.89	3.48	2.67	0.01*	Fair
Post-test	9	39.78	4.11			Good

Table 4.23 shows that the scores from the test on knowledge on research conduction of the sample group of faculty of Physical Education Institute in the North after the training is higher than before the training with statistically significance at the level of P<.05. The score from the pre-test (before training) is in moderate level ($\overline{X}$ = 24.89) and the score of post-test (after training) is in good level ($\overline{X}$ = 39.78).

Table 4.24 Comparison of the mean and standard deviation on the Attitude toward research conduction of the sample group of the faculty of Physical Education Institute in the North before and after the training

Test	n	$\overline{X}$	S.D.	Wilcoxon Value	Wilcoxon Prob	Criteria
Before training	9	4.30	0.18	2.67	0.01*	Good
After training	9	4.66	0.10			Very Good

Table 4.24 shows that the attitude toward the research conduction of the sample groups of the faculty of Physical Education Institute in the North after the training is higher than those before the training with statistical significance at the level of P<.05. The attitude before the training is in "Good" level ($\overline{X}$ = 4.30) and the attitude after the training is in very good level ($\overline{X}$ = 4.66).

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Table 4.25 Comparison of the mean and standard deviations of the report quality the research of the sample group of Faculty of Physical Education Institute in the North

Test	n	$\overline{X}$	S.D.	Wilcoxon Value	Wilcoxon Prob	Criteria
Quality of research report	9	2.38	0.12	2.67	0.01*	Moderate

Table 4.25 shows that the quality of research report of the sample group among the faculty of Physical Education Institute in the North is higher than the identified criteria with statistical significance at the level of P<.05. In the whole picture of the report of research have the quality level in Moderate level ($\overline{X}$ = 2.39).

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