Research Article

THE DEVELOPMENT OF PRACTICAL BIG DATA IN HEALTH EDUCATION, PHYSICAL EDUCATION AND SPORTS SCIENCE IN NORTHERN THAILAND

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Pufa Savagpun[1*]

[1]Faculty of Education, Naresuan University, Phitsanulok 65000, Thailand

*Corresponding Author, E-mail: pu.fa@hotmail.com

Abstract

The purpose of this research aimed to study data in health education, physical education and sports science in Northern Thailand and to develop practical big data in health education, physical education and sports science in Northern Thailand for policy setting in trend and direction in health education, physical education curriculum. The research methodology was set by Ethnographic Delphi Future Research and focus group. Sample group were 252 lecturers and teacher student in health education, physical education, 7 expertise "Professor" academic entitle in health education, and physical education by specific sampling. Synthesize in policy setting future for Faculty of Education, Naresuan University by 5 Likert scale to data analysis survey, interview expertise in trend and future direction as research tools. The research found that: Northern institute of higher education that offers physical education, sport science and exercise science comprised of 16 institutions. Direction for promoting the network of instructors (Instructors) in higher education institutions for academic position development especially courses on writing books, textbooks and writing articles in foreign languages and community networks (Community) in the development of teaching methods general sports skills judging, research and foreign language use. Direction for promoting the creation of a short training course (Training) 6-12 hours in an online format by focusing on the process of recruiting, modern training topics, reputable speakers with certificates and reasonable fees. Those people who decide to study "Master Degree programs (Master Degree) in physical education and exercise science" are focus on the reputative university, full-time lecturer and advice from close people.

Keywords: Big Data, Health Education, Physical Education, Sports Science, Northern Thailand

Background

Human resources are an important driving factor in raising the development of the country in all dimensions towards the goal of becoming a developed country through wisdom and innovation in the next 20 years. Therefore, it is necessary to lay the foundation of the country's human resource development in a systematic way. By focusing on the development and upgrading of people in all dimensions and at all ages to be good, competent and quality human resources ready for the development of the country going forward to its full potential which Thai

people in the future must be ready both physically, mentally, and intellectually. Have good development all around and have good health at all ages have the right principles and the skills necessary in the 21st century (Government Gazette, 2018). So that human resources of all dimensions and ages can be developed and upgraded to their full potential and appropriateness. The structure of the role of education remains a key challenge for the country's development that although teaching management according to the Basic Education Core Curriculum of 2008, all 8 subject groups will be more comprehensive (Ministry of Education, 2018). But there are still problems with the quality of educational services with different standards between areas. Especially in health and physical education learning subject group, which is one among the main reasons why Thailand still has problems of inequality in many dimensions such as health. As well as the development of international teaching methods that require a review of teaching systems and physical education knowledge (Erik & Dean, 2020). Physical education has a teaching process by It aims to encourage students to develop physically, mentally, emotionally, socially and intellectually as a philosophy for this new century. But sometimes teachers may not be able to pass all those aims to their students (Janemalm et al., 2020). As a result of the change from globalization and advances in science and technology, it has developed by leaps and bounds and has resulted in new innovations. The driving force of physical education teaching and learning may be slower than artificial intelligence technology. Internet of things big data analytics robots and drones. In addition, for the complete future of Thailand therefore, the science of physical education cannot place its own interests solely in the classroom. The reason for stepping into a super-aged society in 2031 (Government Gazette, 2018) will create new opportunities. To create and develop learning management to meet the needs of the elderly group that will continue to grow. Including the expectation that Thai families will be smaller and more diverse. The physical education scene should play a role in preparing the population for quality and appropriate technology to be used in teaching and learning so that learners can apply their knowledge, competencies, skills and attitudes in physical education real life for timely adaptation with creativity and skills in the 21st century that change with globalization that will lead to urbanization lifestyles that change rapidly. This will be a major challenge to the situation of physical education in Thailand where education policies are defined as local missions or decentralized. Therefore, it is an issue that should be proven and analyzed on the dynamics of the situation of physical education in each region. The authors will present facts about the number of teachers and students in higher education institutions in the field of physical education. Number of teachers teaching physical education in government, private, local schools and higher education institutions as well as forecasting trends in the development of physical education in the North that will benefit the development of Thailand in the future (Karma & Karma, 2014).

The physical education teaching and learning in the second decade (2010-2020) of the 21st century is still a continuation of the previous problematic impact. The academics and researchers were realize and try to improve and develop teaching and learning management to be more effective coherent in the 20-year national strategy. Since the development of physical education teachers' competence in the education system an example of an institution of physical education which is now statutory as a national sports university (Government Gazette, 2018). For driving towards becoming an ASEAN community from a survey of 200 physical education teachers and 5 administrators from physical education institutions across the country, Kathogthung, (2013) found that teachers in the Institute of Physical Education lacked knowledge of technology and foreign language skills, including lack of

expertise in research and development of academic articles. Therefore, guidelines for improving the competency of physical education teachers are presented as important is knowledge and academic communication and use of technology management and curriculum development, research and foreign languages. Meanwhile, the competence of teachers in health education and physical education subjects has also been developed for effective teaching-learning management on par with those in ASEAN countries. By questioning a sample of 384 teachers in Bangkok and other provinces, it was found that teachers should have the skills and ability to see the values of human beings as an essential basis for treating one another as human beings as well as an attitude of pride in being Thai which shows nationalism of Thai people (Punnara, 2013). This study for the development of teacher competency in physical education at the beginning of the second decade is noteworthy that the influence on the advancement of internationalization, even from the ASEAN community also affects teachers' alertness. In becoming an awake citizen with a universal consciousness and English for communication skills. The need for information and digital media literacy it also reflects the important role of working together as a team and having leadership. In addition, studies and research have been conducted to develop physical education teaching styles to be more in line with the needs of more diverse learners. Research on the management of physical education for children with special needs appears to provide stimulating directions regarding the arrangement of learning facilities and materials. Teachers should be trained on learning management processes, including promoting participation in physical education learning management with an emphasis on student-centered learning (Wongprasert, 2013).

For the adjustment of higher education institutions to the direction of lifestyle changes where expectations and time are opposites, having information will make decision making more effective. Especially the use of large data sets (Big Data) (Kulwanichchaiyanan, 2019). Although when did the first use of big data in Thailand occur, there is no clear survey. But the trend of using big data has become apparent since 2016 during the government's push for Thailand Digital 4.0. By starting projects related to this big data. It is imperative that the Faculty of Education survey each faculty whether there are still manual or “man-made” sectors that may be data on the number, interests, expectations, and needs of the Faculty of Education. It's actually an experience including human thought. They are a form of processing mechanism. Doing big data projects it can be compared to creating tools to help people make more principled decisions and also protect against operational risk. Different decisions may not be the same resulting in unclear control over the quality of work. In this section, big data will be used to create a decision-making model Make the work process happen precisely. And faster, such as deciding to develop or adjust the curriculum format within the Faculty of Education. Previously, it was merely a demand survey. And send it to the administrators to approve the course but when more data accumulates over many years (Lena et al., 2006). This allows us to create a Machine Learning Model that produces results. Assist in course approval. Every day computers are able to process ever-changing contexts of demand with speed and accuracy.

Developing large datasets requires exploring what form the data takes. And how should there be guidelines for further storage? This can start from doing design thinking or designing data collection. To obtain the required information in a way that the filler does not feel difficult to provide information, such as a survey of the number of teachers in the health and physical education learning subject group (Ralph, 2003). And may develop into the data collection of future graduates' needs for self-improvement next, a big data project consultant is needed. There must

be an analytics part, including analytics, machine learning and data science and different ways of thinking in order to turn raw data (data) into facts (information) into results of in-depth analysis (insight) and make the right decision (right decision) must have a thorough understanding of analysis or mathematical modeling. Of course, technology is constantly changing and quite fast look for technologies or services should be as flexible as possible (Savagpun, 2020) because each institution each problem has different limitations or goals for working. Therefore, it is necessary to find a unique solution. And which organizations can find solutions faster than change strategies quickly? And can develop further by leaps and bounds to become the best leader in that field.

Finally, the state of problem, the development of the Faculty of Education to become a Big Data Organization is to change the working concept. That is, not sticking to the same old things, not worrying about making mistakes. But we have to try to get the job done as quickly as technology changes. Therefore, under the administration of Associate Professor Dr. Pakorn Prachanban, Dean of the Faculty of Education, Naresuan University in response to strategy 1.4 in developing and driving the system, relationships, cooperation between faculty and alumni by focusing on the development of intelligent information systems (Smart Info) for the development of the Faculty of Education. And the decision-making of the administrators with the development of information systems, learners' needs cover target groups at the bachelor's level and working force in Northern Region for the benefit of receiving planning and course design learning management and education management model. Faculty of Education will be an organization of teaching and learning activities and the evaluation of the development of a large-scale operational. Database system is therefore important for policy developments that can be used for planning admissions and curriculum design, learning management and education management model. Teaching activities and assessments at both graduate level and graduate studies in the field of physical education and exercise science in the future, causing the researchers to realize the benefits and importance of studying a large database system for action in health education, physical education and sports science in Northern region. Finally, the research result lead to create a quality curriculum in physical education with the necessary of people to drive the development of the Faculty of Education, Naresuan University.

Research Objective

1. To study big data in health education, physical education and sports science in Northern Region

2. To develop a practices large database system for health education, physical education and sports science in Northern Region

Research Methodology

Research subject “The development of practical big data in health education, physical education and sports science in Northern Thailand”, is a research using EDFR (Ethnographic Delphi Future Research) techniques and focus group techniques.

Sample

Sample group were 252 lecturers and teacher student in health education, physical education, 7 expertise "Professor" academic entitle in health education, and physical education by specific sampling, with the sample selection criteria as follows:

Graduated with a doctor of philosophy degree in a field related to health education and/or physical education and has an academic entitle at the level of "Professor".

A teacher and student in a higher education institution in the North in the field of health education and/or physical education of 252 people, 16 institutions selected specifically according to the research objectives (Purposive Sampling) with the sample selection criteria as follows:

Have experience as an instructor in subjects related to learning subjects health education and/or physical education or have experience in doing the job related to health education and/or physical education for at least 10 years.

Research Tool

The first tool is a semi-structured interview, in which the 1st round of EDFR (EFR) is open-ended questions with trend of curriculum development and teaching in health education and physical education in Thailand.

Tool Set 2 was a researcher-generated opinion questionnaire for use in EDFR Round 2 and EDFR Round 3, which was an open-ended text questionnaire on a 5-level Likert type evaluation scale.

Tool Set 3 group discussion in future curriculum and curriculum trend, it will be used in group conversations (Focus Group).

Data Collective

1. Collect information from interviews

Performed during the day, the data were collected from the Semi Structure Interview, which took about a minute per person and focused on interviews. The researcher will record audio and take notes throughout the interview. At the end of each issue, or approximately every 10-15 minutes, the interview will be concluded or any further amendments will be made. Then collect data from the notes and tape recordings for further analysis.

2. Collect data from questionnaires

Round 1 runs between 24 January, 2021 and round 2 runs between 17 April, 2021 by conducting postal delivery with an appointment to pick up or sent back.

3. Collect information from group conversations

Carry out on the day, data were collected from group discussions of health education and physical education teachers according to the group discussion guide. The process took 2 hours during the group discussion. The researcher recorded audio and recorded it throughout the conversation. Then collect data from the notes and tape recordings for further analysis.

Data Analysis

Conduct both quantitative and qualitative data analysis as follows:

1. Preliminary data analysis and historical document analysis on the situation of curriculum development and teaching and learning management in health education and physical education in Northern region.

2. Fundamental data analysis and expert answer analysis from the interview form for EDFR Round 1 (EFR).

3. An analysis of expert responses from the questionnaire in EDFR Round 2 (Delphi Round 1) was used to analyze the median, mode, interquartile ranges of each answer. And then show the position of the median interquartile range and the position each expert answered and then asked in the EDFR Round 3 (Delphi Round 2).

4. The analysis of expert responses from the questionnaire in EDFR Round 3 (Delphi Round 2) was used to determine the median and modal differences and the interquartile range of each answer.

Research Results

Research results on “The development of practical big data in health education, physical education and sports science in Northern Thailand” can be summarized as follows.

1. Higher education institutions that teach physical education, sport science and exercise science comprised of 16 institutions, representing 55.17%.

2. The status of the respondents in higher education institutions that teach physical education, sports science and exercise science in Northern Region consisted of 58 teachers, representing 23 percent, and 194 students, or 77 percent.

3. The highest educational qualifications of the respondents in higher education institutions offering physical education, sports science and exercise science in Northern region, with doctoral degrees, totaling 18 people, representing 7.1%, with master's degrees of 23 people, or 9.1%, with bachelor's degrees, 172 people, representing 68.3% and lower bachelor's degree, 39 people, representing 15.5%.

4. Academic position of respondents in higher education institutions offering physical education, sports science and exercise science in Northern Region have no academic positions of 203 people, representing 80.6%, 36 instructor level, 14.3%, 12 Assistant Professor level, or 4.8%, Associate Professor level 1 person accounted for 0.4 percent and had no academic entitle at the Professor level.

5. Work experience of respondents in higher education institutions offering physical education, sports science and exercise science in Northern region, in the North, 194 people, representing 77%, have 1-3 years of work experience, 22 people, accounting for 8.7%, with 4-6 years of work experience, 8 people. accounted for 3.2 percent, with 7-9 years of work experience of 8 people representing 3.2 percent and 10 years of work experience of 20 people representing 7.9 percent.

6. The working status of the respondents in higher education institutions offering physical education, sports science and exercise science in Northern Region were 184 students, representing 73%, of which 4 were coaching students, representing 1.6 percent. There are 13 civil servants, representing 5.2 percent, 30 are university employees, accounting for 11.9 percent, and the employment rate is 15 people, accounting for 6%.

7. The teaching duties of respondents in higher education institutions offering teaching in physical education, sports science and exercise science in Northern Region did not teach 187 people, representing 74.2 percent, teaching at bachelor's degree, 66 people, representing 26.2 percent teach 10 master's degrees, representing 4%, and 10 teaching doctoral degrees, accounting for 4%.

8. Being responsible for the curriculum of respondents in higher education institutions that offer physical education, sports science and exercise science in Northern Region is not responsible for 199 people, representing 79 percent, 44 people are responsible for bachelor's degree programs accounting for 17.5 percent, responsible for master's degree programs 9 people accounted for 3.6% and responsible for doctoral programs 9 people representing 3.6 percent.

9. The intention of training short-term courses of respondents in higher education institutions that teach physical education, sports science and exercise science in Northern Region wished to train short-term courses of 149 people, representing 59.1%, and none the intention of training short-term courses was 103 people, representing 40.9%.

10. Characteristics of short course training of 73 respondents in higher education institutions offering online courses in physical education, sports science and exercise science in Northern region, representing 29%, 11 short-on-site people accounted for 4.3% and both forms of 168 people accounted for 66.7%.

11. The duration of training for short courses of respondents in higher education institutions that teach physical education, sports science and exercise science in Northern Region require 24 hours training for 16 people, representing 6.3%, 21 training 18 hours. people accounted for 8.3%, 12 hours training of 51 people, representing 20.2%, 6-hour training of 107 people, representing 42.5%, and 98 people, accounting for 38.9% of unscheduled training periods.

12. The topic of training for short courses of respondents in higher education institutions that teach physical education, sports science and exercise science in Northern Region want to train, general sports skills: 108 people, accounting for 42.9%; advanced sports skills: 78 people, accounting for 31 percent; teaching method development of 120 people, accounting for 47.6%; refereeing of 90 people, accounting for 35.7%. Innovation development of 62 people accounted for 24.6%, communication development of 58 people accounted for 23 percent, foreign language usage of 71 people accounted for 28.2%, research of 74 people accounted for 29.4%, evaluation and measurement for 56 people, representing 22.2 percent, sports science 1 people, accounting for 0.4 percent and tourism industry, 1 person accounted for 0.4 percent, administration of 1 person accounted for 0.4 percent, health education and health promotion number 1 person accounted for 0.4 percent, and any topic number 1 person accounted for 0.4 percent.

13. The first factor affecting the decision to attend the short-term training course of the respondents in the higher education institutions offering physical education, sports science and exercise science in Northern region, No. 1, was the modernization of 56 training topics. People accounted for 22.2%, the second was the reputation of 56 speakers, accounting for 22.2%. No. 3 is the location and food service of 63 people, accounting for 25 percent. The 4th place is with certificates of 54 people, accounting for 21.4%. The 5th place is the reputation of 28 speakers, accounting for 11.1 percent. And the 6th place is the training fee for 26 people, representing 10.3%.

14. The first factor affecting the decision to study at a higher level of the respondents in higher education institutions offering physical education, sports science and exercise science in Northern region, number 1, was the reputation of the number of institutions, 43 people accounted for 17 percent, the second place was 61 full-time faculty members, accounting for 24.2%. The third place was the policy of the parent institution of 71 people, accounting for 28.1 percent, the fourth place was the recommendation from close people of 67 people, accounting for 26.5 percent, and the fifth place was the tuition fee of 35 people, accounting for 13.8 percent.

15. The desire for admission to higher education of respondents in higher education institutions that offer courses in physical Education, sport Science and exercise Science in Northern Region No. 1 is a Master's Degree in Physical Education and Exercise Science, 161 people accounted for 63.8 percent, the second place was 42 people, accounting for 16.6 percent. No. 3 is Ph.D. in the field of Physical Education and Exercise Science, 29 people accounted for 11.5 percent, the fourth was a Master's Degree in Sports Management, 13 people accounted for 5.1%, and the fifth was a Doctorate in Sports Management, 7 people accounted for 2.7%.

Research Discussion

1. Policy recommendations on curriculum development and teaching and learning in health and physical education from the development of a large database system for health education practices physical education and sports science in the lower Northern Regionfound that Higher education institutions that teach physical education. There are 16 institutes of sports science and exercise science, accounting for 55.17% of the total of 31 institutions of higher education in the North. (Ministry of Higher Education, Science, Research and Innovation, 2020). Naresuan University is one of 16 higher education institutions offering physical education and exercise science programs at the bachelor's, master's and doctoral levels, as well as the National Sport University Chiang Mai Campus. It is an opportunity to increase the number of graduate students in the future. The respondents were 58 lecturers, or 23 percent, and 194 students, or 77 percent, with most of them 172 persons with the highest educational qualifications at bachelor's degree or equivalent to 68.3%, 39 persons or equivalent to lower bachelor's degree level, or 15.5 percent, 23 graduates or 9.1% for master's degree, and 18 doctorate degrees or 7.1 percent, respectively, suggest that future curriculum development and teaching and learning in health and physical education should be accelerated to meet the needs of those who are graduating with a bachelor's degree. In line with the recommendations of Professor Emeritus Dr. Sombat Kanjanakij, who said that “Department of Physical Education and Sports Science Faculty of Education Naresuan University will be an important production center for Masters and Doctorates in Physical Education and Sports Science.”

For a group of teachers in higher education institutions that teach physical education, sports science and exercise science in Northern Region found that it was 36 instructor level or 14.3 percent, 12 assistant professor level or 4.8 percent, 1 associate professor or 0.4 percent and no academic entitle at the professor level shows that teachers still have a high demand for academic position development. By Professor Dr. Kanit Khiewichai made suggestions to the researcher that “There should be a training course on the development of entering academic positions for teachers in higher education. This may be done in collaboration between institutions and should be continually training in a workshop style especially writing textbooks, books, and developing articles in foreign

languages." Consistent with the survey, it was found that most lecturers teach at bachelor's level, of 66, or 26.2 percent, teach at master's level, or 4%, and teach at doctoral level, or 4%, or 4%. 44 people, or 17.5%, are responsible for bachelor's degree programs, 9 or 3.6 percent of master's degree programs, and 9 or 3.6 percent of doctoral programs. Prof. Dr. Thanomwong Kritpet gave suggestions for the development of curricula for teachers in higher education that "Curriculum related to modern learning management processes should be developed at the bachelor's level especially the integration of sports science with various subjects." This is in line with Prof. Dr. Jintana Sarayuthpitak, who said, "The growth rate of bachelor's degree programs in physical education and health education in Northern Region is very high. Instructor development should be up-to-date with the needs of learners, which may now require the use of technology." This is in the same direction as the research of Pairote Tantivachirathakun (2016) to develop teaching competency at the bachelor's degree level, in addition to describing content with examples for media use. The students should be divided into groups for brainstorming within the group and propose guidelines for organizing physical education learning activities to promote learner characteristics in the 21st century include 1) responsibility and self-reliance in learning, 2) thinking skills, 3) skills in working with others effectively, 4) searching skills, 5) enthusiasm, 6) basic ICT skills, 7) International language skills, 8) Interest in culture and awareness of the world (Thaesungnern, 2011).

Development of a large database system for health education practices physical education and sports science in the lower Northern Region found that respondents wished to train short-term courses of 149 people or equivalent to 59.1%, preferring to online training of 73 people, accounting for 29 percent, and wanting 6-hour training for 107 people, or 42.5%, and training 12. hours of 51 people, representing 20.2%, and 24-hour training of 16 people, or 6.3%, respectively. Professor Dr. Aim-utcha Wattanaburanon has suggested that "The new generation has a need for quick success. There is a clearly defined period of time to see results. The current training course should consider the needs of the trainees, so current trends should be regularly explored, which can be done online." And it is in line with the new lifestyle which should be online. Therefore, the training organizing committee should develop technology media to be as close to the classroom as possible." This is consistent with Puttipat Leelawattanakul (2012) who said that future online training should have a stage of positive reinforcement. That will stimulate the trainees to be interested in learning and have to develop themselves, especially some trainees who before the training are worried about the training because they are not as proficient in media, information and digital literacy as other trainees. The speakers will be the ones who encourage the trainees to point out, the ability of the trainees that if there is enough intention will be able to learn along with the recipient able to train others (Saidi, 2018).

However, the development of a large database system for health education practices physical education and sports science in the lower Northern Region also found that the respondents wanted to improve teaching methods of 120, or 47.6%, to improve general sports skills of 108, or 42.9%, and to be judges, of 90, or 35.7%. There were 78 people with advanced sports skills, or 31 percent, and the research was 74 people, or 29.4%, respectively. Prof. Dr. Sali Supaporn suggested to the researcher that "Physical education and sports science short courses that will implement teaching methods should be done in the field of online physical education teaching to achieve the goal that should educate participants on the use of technology and the development of innovations for teaching physical education in the future" is in line with the suggestion of Professor Dr. Charoen Krabuanrat who said

that “The training that can be done in the short term is the training in the use of sports science tools that the instructor can develop, such as the use of a 9-square grid, which should also encourage the participants' creativity. It is in the same direction as Phongsatorn Paichit (2018), who mentioned the trend of personnel training and the future workforce in physical education should be of quality in accordance with the standards and the need for training courses to be launched in accordance with the conditions and conditions. Guidelines can be used widely and it is essential to promote research and development knowledge. including the dissemination of research and academic works produced by the Institute's own products. As well as having to prepare people, prepare citizens of the nation to be higher educated people. Knowledge management is in place to facilitate the transfer of information which everyone can use the knowledge for all people who can access to the source of knowledge by using it as a tool in education and as a tool to create empowerment as well as to promote lifelong education.

In this regard, the formulation of policies for the development of health education curricula physical education and sports science in the future found that the factors affecting the decision to attend the short-term training course of the respondents in higher education which offering physical education, sports science and exercise science in Northern Region. The first order was the modernization of the training topics, the second was the reputation of the speakers, the third was the provision of venues and food, the 4th was the certification, the 5th was the reputation of the lecturer, and the 6th was the service fee. Training in accordance with Wikrom Sukthanee (2015) has conducted research on the future of the physical education curriculum for higher education in Thailand for entering the ASEAN community was found that the need to develop a curriculum in accordance with the service recipients is the modernization of the curriculum that responds to the changes in the phenomenon of physical education and sports, both in terms of training courses, instructors who provide training, educational materials, teaching techniques, learning environments and educational services (Chankhaw, 2015). In addition, the need for higher education was found that the factors affecting the decision to study at a higher level of the respondents in higher education institutions offering physical education, sports science and exercise science. In the north region No. 1 is the number one institution's reputation. The second is the course faculty, the third is the parent institution's policy, the fourth is advice from close people, and the fifth is the tuition fee. Make the Department of Physical Education and Exercise Science Faculty of Education, Naresuan University. In addition to monitoring the quality of the curriculum according to educational standards at the higher education level, it should also consider the development of the department holistic is the development of teachers, students, and physical education and sports facilities, in order to affect the reputation of the institution in the future. The development of teachers will have a long-term effect on building a reputation to be accepted in the academic field of physical education and sports science.

2. Policy proposal on the direction of curriculum development and future teaching and learning management in health education and physical education with the Faculty of Education, Naresuan University. In which the researcher has synthesized group discussions with experts, resulting in the direction of curriculum development and teaching management in health and physical education in the future, consisting of;

2.1 Direction to promote the network of instructors (Instructors) in higher education institutions for academic position development especially courses on writing books, textbooks and writing articles in foreign languages.

2.2 Direction for promoting community networks (Community) in the development of teaching methods general sports skills, judging, research and use of foreign languages.

2.3 Direction of promoting the creation of short-term training courses (Training) 6-12 hours in an online format by emphasizing the process of recruiting modern training topics, reputable speakers, certificates giving and reasonable fees.

2.4 Direction of promotion of courses in the Master Degree (Master Degree) in Physical Education and Exercise Science to match the target group who can decide to study from the reputation of the university. Full-time course faculty and advice from close people.

Which the researcher can summarize as a figure 1 showing the direction of curriculum development and teaching management in health education and physical education in the future of the Faculty of Education, Naresuan University.

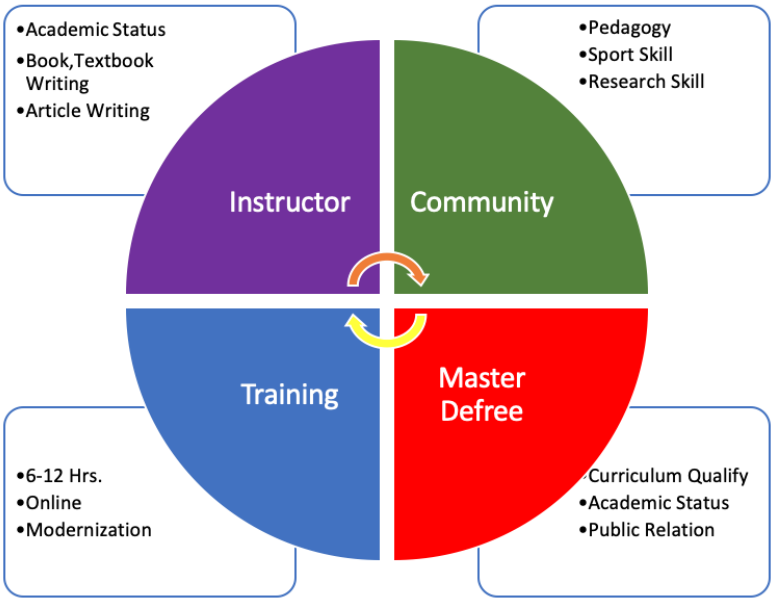

Figure 1 ICTM Model Direction of curriculum development and teaching management in health education and physical education in the future

By ICTM model, the Faculty of Education, Naresuan University which created from synthesizing process of develop a practices large database system for health education, physical education and sports science in the Northern Region. The researcher was download Google Form for Big Data and send to 16 institutes, by the way, this form will be holding on website and update every educational year which researcher identifying as bigdata in chapter 1. (Develop a Big Data is orientation for analysis manage process and relate to a wide range of information quickly and accurately in a teacher's and students' context of 16 higher education institutions in the Northern Region)

and finally the big data will lead to curriculum analysis as “development curriculum in PE and HE which deserve higher education for the future.

Research Recommendation

1. Department of Physical Education and Exercise Science, Faculty of Education, Naresuan University should improve the quality of its programs at the graduate level. Continuous and comprehensive master's and doctoral degrees.

2. Department of Physical Education and Exercise Science, Faculty of Education, Naresuan University should continually develop a network between institutions in order to create mutual academic benefits.

3. Faculty of Education, Naresuan University should develop a policy to promote short-term training courses in order to serve and be a center for developing a network of health education, physical education and sports science teachers in Northern Region.

4. Faculty of Education, Naresuan University should support being a center for the development of health education, physical education and sports science in Northern Region. The Department of Physical Education and Exercise Science is the main mechanism for building the reputation of the Faculty of Education, Naresuan University.

References

Chankhaw, S. (2015). *Development of a health and physical education curriculum for Buddhist novices at the lower secondary education level in Phrapariyattidhamma Schools* (Doctoral dissertation). Bangkok: Chulalongkorn University.

Erik, B., & Dean M. B. (2020). Re-thinking pedagogical content knowledge for physical education teachers – implications for physical education teacher education. *Physical Education and Sport Pedagogy*, 25(5), 451-463. DOI: 10.1080/17408989.2020.1734554

Government Gazette. (2018). *National Strategy (2018-2037).* Bangkok: Office of the Prime Minister.

Janemalm, L., Barker, D., & Quennerstedt, M. (2020) Transformation of complex movements from policy to practice – a discourse analysis of Swedish physical education teachers’ concepts of moving. *Physical Education and Sport Pedagogy,* 25(4), 410-422. DOI: 10.1080/17408989.2020.1727869

Karma, U., & Karma, G. (2014). *Gross national happiness and development.* Thimbu: Center of Bhutan Studies.

Kathogthung, S. (2013). *Guideline for developing the competencies of physical education lecturers in the institute of physical education for driving the ASEAN community* (Master thesis). Bangkok: Chulalongkorn University.

Kulwanichchaiyanan, A. (2019). *Big data series I: Introduction to big data project, intro big data*. Bangkok: Project Proud Press.

Leelawattanakul. P., (2012). *An analysis of a large – scale national survey system: A case study of the child watch project* (Master thesis). Bangkok: Chulalongkorn University.

Lena, B., Mattias, H., Karl-Henrik, D., Tomas, E., & Göran, F. (2006). Scenario types and techniques: Towards a user's guide. *Futures,* 38, 723-739. 10.1016/j.futures.2005.12.002

Ministry of Education. (2018). *Basic Education Core Curriculum 2008 (Revised Edition).* Bangkok: Agricultural Co-Operative Federation of Thailand.

Ministry of Higher Education, Science, Research and Innovation. (2020). *Annual Report of University in Thailand.* Bangkok: Ministry of Higher Education, Science, Research and Innovation.

Phaijit, P., (2018). *Development of curriculum for professional teacher training preparation to enhance competencies of physical education teacher students* (Doctoral dissertation). Bangkok: Chulalongkorn University.

Punnara, R. (2013). *Proposed guideline for preparing health and physical education teachers in secondary schools for the ASEAN community* (Master thesis). Bangkok: Chulalongkorn University.

Ralph, K. (2003). *Managing creativity and innovation*. MA: Harvard Business School Publishing Corporation.

Saidi, A. (2018). *Development of training curriculum to enhance 21st century competencies for physical education teacher by applying facilitating learning with instructional scaffolding* (Doctoral dissertation). Bangkok: Chulalongkorn University.

Savagpun, P. (2020). *Development of physical education and recreation curriculum based on the concept of collaborative education to promote the lifestyle of the displaced in the learning center under the coordinating center for the education of foreign children*. Phitsanulok: Department of Physical Education and Exercise Science.

Suktanee, W. (2015). *Scenario of physical education curriculum at the higher education level in Thailand towards ASEAN community* (Doctoral dissertation). Bangkok: Chulalongkorn University.

Thaesungnern, A. (2011). *Desirable Competencies of Health and Physical Education Teachers between B.E. 2554-2564* (Doctoral dissertation). Bangkok: Chulalongkorn University.

Tuntiwachiratrakun, P. (2016). *Multi-label classification using active learning on large scale and imbalanced data sets* (Master thesis). Bangkok: Chulalongkorn University.

Wongprasert, N. (2013). *Guideline for physical education learning management for student with special needs: Case studies of the welfare education schools* (Master thesis). Bangkok: Chulalongkorn University.