A Comparative Study of Status and Trends of Educational Research in Thailand and Japan

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During the period 1986-96, the number of research in Thailand increased sharply from 1 to 4 times while Japan just increase from 1.02 to 1.4 times. The two nations were quite different in their main area of interests, the level of education, and the problems in doing research. They would be similar in the aspects of research evaluation, dissemination and trends of educational research in the years to come (around 2007).

泰國和日本教育研究的發展趨勢

在1986-96年間,泰國在教育研究方面有1至4倍的增長,而日本方面只有1.02至1.4倍。兩國在研究興趣、教育階段及問題等方面都有很大分別,在評核及應用等方面,在未來幾年間(至2007年)有日漸接近的趨勢。
It is widely accepted that research is an important tool for the development of knowledge and the nation. The body of knowledge that a nation builds for its own development has become an indicator of a country’s progress. For this reason, the Eight National Economic and Social Plan of Thailand (for the period of 1997-2001) has recommended that Thailand invest 0.75% of its GDP in research – this equates to a 50,000 million baht investment in year 2001 (The Thailand Research Fund, 1995). To meet this target Thailand will need 50,000 qualified researchers, 200-500 research administrators and effective research management systems at all levels. However, according to the (The Thailand Research Fund (1995) Thailand has only two researchers for every 10,000 people whereas Singapore and Taiwan have, respectively, achieved ratios 34:10,000 and 55:10,000. It is evident that Thailand needs to do take drastic steps to encourage research throughout the country.

In order to increase the number and quality of researchers four major research institutions have been established in Thailand. The Office of the National Research Commission of Thailand, the National Science and Technology Development Agency, the Thailand Research Fund and the Public Health System Research Institute have agreed to promote both the quantity and quality of research. The Thailand Research Fund (1995), for instance, has identified three main targets. These are to promote quality and useful research studies, to develop qualified researchers, and to initiate effective research management systems. In order to fulfill the three objectives, the Thailand Research Fund has initiated a number of creative projects. These include:

- providing additional funds for research (including research and development projects);
- encouraging researchers to develop and conduct a series of research projects;
- promoting potential researchers;
- launching the Royal Golden Jubilee Ph.D. Program to help produce qualified researchers;
- developing coordinating and relationship models for researchers and research institutions;
- developing managerial skills for researchers and coordinators.

Although the importance of research has been increasingly recognized, in practice, it faces many problems and obstacles. The Office of the National Education Commission (1993) conducted a survey on the status of educational research in Thailand during the years 1986-1990. The survey provided useful information on research topics, research processes, research dissemination and application, including trends for research in the future. The researcher, who at that time was responsible for research promotion for the Faculty of Education, Chulalongkorn University, has reviewed this study and found it highly useful for the promotion of research activities. However, the study provided data up to 1990 only. The research team, therefore, was interested in pursuing the study in order to get up-to-date data which would be useful for research planning and resource management.

At present, Thailand has entered the age of globalization where technological advancement is rapidly disseminated all over the world. Through advanced communication and transportation systems, people in various parts of the world are able to access and learn from each other’s innovations, thoughts and practices. Japan is one among many countries that have close economic, social and cultural relations with Thailand. Thailand and Japan have often cooperated on joint projects, especially in education and research. One of these is the Exchange Program of Researchers, the program developed by the National Research Council of Thailand (NRCT) and the Japan Society for the Promotion of Science (JSPS). Since 1978, many Thai researchers have received funding to go to Japan to gain research experience in specific area under the tutelage of Japanese scientists (Japan Society for the Promotion of Science, 1997). This joint program has encouraged the research team to extend their interest into a comparative study of research trends and status between Thailand and Japan. It is expected that findings from this research study will provide insights into the development of educational research for both countries and suggest ways the two countries can work together more cooperatively, productively and efficiently on the promotion of quality research and researchers.

With financial assistance from JSPS and the cooperation from the University of Tsukuba in Japan, the Thai researcher was able to collect data in Japan through questionnaires and interviews with the assistance of Professor Yokuo Murata, the host scientist at the University of Tsukuba. The data were collected during two periods. The first survey was conducted during July 1993-January 1994, and the second from October 1997 to January 1998. Additional data collection during the second period was possible with the assistance of Professor Dr. Shigekazu Takemura from Hiroshima University. The Annual Research Fund allocated by the Thai government through the Faculty of Education, Chulalongkorn University enabled the research team to complete the rest of research activities.

Objectives

This study had two main objectives as follow:

- To study and compare the status of educational research in Thailand and Japan during the period of 1993-1998.
To study and compare trends in educational research in Thailand and Japan in the next decade (around Year 2007).

Assumption

The comparison made between research status and trends in Thailand and Japan was done with an awareness of the differences in economical, social and cultural backgrounds of the two countries. The assumption underpinning the study was one can learn from the differences and similarities that one has in relation with others.

The Research team consists of Tisana Khemmani, Suwimon Wongwanich, Suwattna Utairat, Pimpan Dachakupt, Permkiat Khamawatana, Soison Sakolrak and two Japanese host scientists, Professor Yokuo Murata and Professor Dr. Shigekazu Takemura.

Samples

Questionnaire respondents in Thailand and Japan were educational administrators, educators, and university/government/private sector research staff. The subjects being interviewed in Thailand and Japan were researchers with visions selected to an appropriate blend in respect of age and experience. Number of participants for data collection is presented in Table 1 below.

Table 1: Number of sample

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<tr>
<th>Data collection method</th>
<th>Thai Samples</th>
<th>Japanese Samples</th>
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<tr>
<td>Questionnaires</td>
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<tr>
<td>Interview</td>
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*The researchers employed the data from the study conducted by ONEC (1993)

Research Instruments

Thai, English, and Japanese versions of questionnaires and interview forms on status and the trends of educational research were developed for this study.

Research Procedures

1. Investigating relevant data and documents, studying data and summarizing data to obtain a bird’s eye view of the status and trends of educational research in both countries.
2. Developing tools for data gathering; writing up questionnaires and interview questions in Thai and then translating them into English and Japanese.
3. Collecting pertinent data in both Thailand and Japan.
4. Analyzing the data obtained, summarizing, and comparing data obtained from the two countries.

Research Results

Khemmani, Wongwanich, Utairat, Dachakupt, Khamawattana, and Sakolrak (1998) have analyzed data and summarized the findings as follows:

1. General data on educational research

1.1 Organizations involving in educational research

It was found that there are similar major departments involved in educational research. In both countries there are organizations at the national level that support all fields of research and others which exclusively support educational research. There are also operational research units at the university level and research units at the local level. However, Japan seems to take a more unified approach to the administration of educational research. In addition, there are more operational research units at the university and at the local levels in Japan, making it possible for Japan to be more effective than Thailand in collecting and supporting research projects. Nevertheless, there are trends that both countries that will increase the support of research projects in the future. In Thailand, the support will target both the quantity and quality of research, while in Japan the support will target the expansion of research projects at the local and international levels.
1.2. Number of research projects.

It was found that during the ten-year period from 1986-1996 that the number of research projects in both Thailand and Japan increased. Between the years 1986-1990, the number of Japanese research projects was 36 to 37 times higher than that of Thailand. Between the year 1991 and 1996, the ratio went down to 10 to 12 times. During this ten-year period, from 1986-1996, the number of research projects in Thailand climbed 1 to 4 times, while those in Japan gradually rose from 1.02 to 1.4 times. One trend showed that the number of Thai research projects was likely to increase at a high rate than the same in Japan. At the same time, the difference between the number of Thai and Japanese research projects will become increasingly smaller.

1.3. Fields of research.

The most popular research topics in Thailand were measurement and evaluation, while in Japan there were very few research projects on this topic. On the other hand, while the most popular topic of research was history/foundation of education in Japan, this topic was rare among the Thai research projects. The number of research projects on methodology/teaching was proportionately similar in Thailand and Japan. In the future, it is likely that research projects in Thailand will be conducted on the previously unexplored issues such as special education, childhood education and non-formal education. Future issues in Japan will likely concentrate on teacher development and the type of curriculum that fits the contexts of contemporary society. With regard to methodology/teaching, Thailand and Japan will maintain the same degree of emphasis. It is likely that both countries will conduct more research into educational administration.

1.4. Levels of education being involved in research studies.

It was found that both Thai and Japanese the research targeted all levels of education. In Thailand most research deals with the elementary and secondary levels, while in Japan most of the projects deal with the tertiary level. Other quite popular research projects in Japan were non-formal education, special education and childhood education, which were quite contrary to the Thai interest. There is a sign, however, that Thailand is going to give more emphasis to each of these topics.

2. Research process.

2.1. Research planning.

It was found that both Thai and Japanese researchers normally made one to two year plans for their research studies, both individually and in groups (proportionately more groups than individuals). These research activities were mostly managed by organizations or departments through their research committees. Most Thai researchers made both short-term and long-term plans, while the majority of Japanese researchers reported that their organizations had no research plan. Influential factors in research planning in both countries were the proficiency and nature of research staff and benefits or results expected to be obtained from the research. In Thailand, the policy or objective of the organization was the most influential factor on research planning. Both countries aimed to utilize their research for the improvement of teaching and learning as well as the academic development in the field. In the future, research planning in Thailand will largely based on educational policy, while Japanese researchers will take into account the needs of the organizations/administrators. In addition, there is a trend that educational research network in Japan will be further developed at the national and international levels in Japan. In Thailand a the emphasis will be mostly at the national level.

2.2. Research issues and topics.

Most Thai and Japanese researchers proposed research topics and submitted these to the organizations or administrators. In Thailand there is a trend that the topics will follow the policy and measures set by the National Education Plan and Education Act. Therefore, these will include: the learning process reform, educational services to serve a variety of target groups, decentralization of education, improvement of educational quality and standards, benchmark establishment, and educational innovations including media and technology. The nature of research topics will be pro-active in order to prevent problems. In Japan, the trend will be on the administrative restructuring, teacher education policy, teacher development, ethics, curriculum, sciences, process skills, and educational media/technology. It is interesting to note that science development has always been one of the topics of interest for Japanese researchers, while this is not the case for their Thai counterparts.

2.3. Research methodology.

It was found that most of the research in Thailand and Japan were survey research, followed by experimental and qualitative research projects in Thailand, and analytical and historical research in Japan. In Japan the interview technique is not a popular means of data collection, because it is considered a disturbance for the interviewees. Many Thai and Japanese researchers used computers to analyze data. There is a trend that more computer technology will be used to analyze data in both countries. In Japan, a new kind of research which obtains data from secondary sources will emerge as will more cross-country survey research.

2.4. Types of research problems.
Both Thai and Japanese researchers agreed that the most important supporting factor for research was sufficient funding. Thai researchers faced a problem of inadequate time for doing research and a lack of moral support from the administrators. Japanese researchers had problems with data collection, literature review, and a lack of research assistants and insufficient money. There is a trend that smaller research projects in Thailand will receive less support while macro and interdisciplinary projects will get more support. In Japan, the problem of data collection will continue, while other problems will gradually subside.

2.5. Quality of research.
Both Thai and Japanese researchers agreed that the quality of research conducted by university faculty members was better than that conducted by school teachers. Although it was reported by Thai researchers that they had some criteria for research quality evaluation, there remained a lack of a suitable evaluation at the system level. On the other hand, an inadequacy of both the criteria and the evaluation system was reported by Japanese researchers. Also, there seemed to be no foreseeable efforts to improve this situation in the future. However, there is a trend that Japanese researchers will get more support in terms of international cooperation for research staff exchange and sharing of research data. In the future, research works in both countries will improve in quality, especially in the case of Thailand, in which the concept of research quality assurance will spur the sponsors to monitor the progress of research periodically, including efforts to provide a team of professional researchers to act as consultants to new researchers.

2.6. Satisfaction in research work.
There were both satisfaction and dissatisfaction on the part of the Thai and Japanese researchers. Thai researchers were satisfied with the accomplishment of their research projects and the opportunity to apply research results. However, they were dissatisfied with time constraints and their own shortcoming in ‘making time’ for doing research. Japanese researchers were also satisfied because their work could benefit academic development and received public interest. However, they were still dissatisfied with time constraints that prevented them for exploring their topic in greater depth. In the future, the degree of research satisfaction will depend on how much support is provided to enable the researchers to achieve success in conducting their research.

2.7. The dissemination of research results.
Both Thai and Japanese researchers had a similar opportunity to disseminate their research work: Publishing a book or research report, writing research articles for professional journals, presenting research findings at seminars or conferences. A major problem has always been a lack of funds for accessing some of these opportunities. There is a trend that research results will be increasingly disseminated through the Internet and other database network systems.

2.8. The application of research results.
It was found in both Thailand and in Japan that only some parts of the research had been utilized. The part of research most utilized was research results. Most of the people who utilized research results in Thailand were teachers in schools, while in Japan it was university faculty members. Both countries seemed to lack a system for research utilization, but, this is expected to improve in the as networks and research databases re built at national and international levels.

3. Research support.
Most research grants in Thailand and Japan came from the government. Additionally, Japanese researchers were further subsidized by private sectors. While their Thai counterparts received some subsidy from the private sector, this was very small when compared with the Japanese. The bulk for Thai research grants came from overseas research grants, loans, and additional donations. At present, there are many forms of direct educational research support in Japan, such as the establishment of research-oriented universities, the development of new researchers, the improvement of research facilities, the improvement of the system of information technology and the establishment of a coordinating center for international researchers. In Thailand at present, there is an independent organization under the government, i.e., the Thailand Research Fund, which tries to raise funds from both government and private sectors and support research activities in many forms. For examples, it provides research grants, develops new researchers, and launched the Royal Golden Jubilee Ph.D. Program. In the future, both Thailand and Japan will likely support large-scale research projects and multidisciplinary research by drawing more funds from the private sector and developing research networks at both the national and international levels.

Discussion
This particular research has generated many interesting results, however, only a few points which are highlights of the study can be introduced for discussion here.

1. Organizations conducting educational research.
It was found that there is a high level of conformity across the various organizations conducting educational research in Japan. The reason for this is that both the local and national educational
agencies that coordinates the efforts in educational research. Moreover, there are a series of well-organized database educational research in Japan, which can be attested by thousands of research projects each year. The administrative/management structure could well be the most important contributing factor to the development of management systems which make it possible for data to be linked across organizations. This particular administrative/management structure could well be the most important contributing factor to the development of educational research in Japan, which can be attested by thousands of research projects each year.

The number of research projects in Japan is far superior to the number of projects conducted in Thailand. In fact the number of research projects.

Pravet Wasi (1995) stated that it was necessary to use national intellectual strategies, which embrace all the forms of intelligence to solve problems and develop the Thai nation. One of the eight forms was research. He added that Thailand remained weak in research practice. There has been neither a clear policy nor an effective research management mechanism. Although the National Research Council was established 30 years ago, her accomplishments have been less than satisfactory, mainly because of a rigid bureaucratic system. On the other hand, The Thailand Research Fund (established through special proclamation) which has less financial backing and support from full-time as researchers is less bureaucratic and represents a fine example for the effective management of research. However, they have not received enough funds to build the required knowledge base. Funds need to be raised from both the government and the private sector in order to help defray the cost of running The Thailand Research Fund. Pravet Wasi(1995) proposed that an innovative form of Basic Scientific Research Institute be established in a flexible and independent manner and that a team of outstanding scientists could be brought together to conduct research earnestly and, honorably. In this way, Thai youngsters would have a mental image of what a profession of scientist should be like.

When applying Pravet Wasi’s proposal to the Japanese structure of educational administration, we can see that Japan has an organization at the national level whose duty is to manage educational research, called NIER under the Ministry of Education. In Thailand there is no similar organization directly responsible for the management of educational research. Only the Office of the National Research Center of Thailand whose duty is to manage all forms of research. The closest office to Japan’s NIER in Thailand is just a section or unit, i.e., Educational Research Unit under Academic Department, Ministry of Education. However, this unit is not responsible for research at every educational level. Research at the university level is under the Ministry of University Affairs. As we can see, in terms of the structure of educational research management, it is apparent that the Japanese system is much stronger, due to the fact that there is an organization at the national level that directly oversees educational research. There should be a feasibility study to determine whether it is possible to establish a similar organization in Thailand - one with an independent system of administration as suggested by Wasi.

2. The number of research projects.
The number of research projects in Japan is far superior to the number of projects conducted in Thailand. In fact the Japanese conduct 12 times as many research projects than the Thais. There are many explanations for such a great disparity.
Firstly, the economic conditions in both countries are entirely different. Based on the Index of International Competitiveness 1997 (Office of the National Education Commission, 1997), Japan GDP per capita was $36,857, while Thailand was $2,770. Per capita Japanese public expenditure on education was $1,276, while in Thailand it was a mere $92. Kriangsak Charoenwongsak (1996: 155) compared Thai data on educational expenditure with other developed countries* and found an increasingly higher figure of the annual Thai budget was allocation to education from 1975 to 1992, increasing by an average of 12.7% per year. But the growth was still smaller than the average increase of the national expenditure of 13.7%. By comparison, Thailand’s annual education budget has been only 3.4% of GDP for the previous 15 years, while it was more than 5% in the USA, Japan, France and England. Even Malaysia had been 6% since 1980. In addition, the data on the annual Thai education budget indicates that only 0.15% of GDP, on average, is committed to educational research as opposed to the 2-3% spent by most developed countries. Thai expenditure on research and development was 5 billion baht while Japan spent 3,000 trillion trillion for the same purposes (Charoenwongsak, 1996: 165-167). With such a staggering contrast between the Thai and Japanese economy, it is no surprise that Japan research on education is far more advanced than that of Thailand.

Secondly, there are 1,243 universities and colleges and 56,427 kindergarten, primary, and secondary schools in Japan (Ministry of Education, Science, Sports and Culture, 1998: 16-17) as opposed to 515 universities and colleges (University Bureau, 1998), and 38,272 schools in Thailand (Ministry of Education, 1997). These figures indicate that Japan has 2.5 times more universities and colleges, and 1.4 times more schools than Thailand. This alone attests to the fact of why there are fewer educational research projects in Thailand.

Thirdly, the number of research projects in Japan is drawn from a more comprehensive research database than that in Thailand, and from many more sources—both from government and private sectors. On the other hand, the Thai database is quite haphazard. In addition, many research projects have not been included in the database, resulting in a deflated number of research projects being reported. It was also found that very few research projects conducted by private sector were included. Another point is that research projects in Japan include every possible statistical collection of data which may not be what is traditionally defined as research projects*. As a result, the number of research projects conducted in Thailand is much smaller than that in Japan.

Fourthly, the 334 research projects conducted in Thailand during the years 1986-1987 were relatively small but rose to 1,894 by 1991-1993. Unlike this relatively rapid increase, the number of research projects in Japan number of rose steadily. From the period of 1986-87 to 1991-93 the number of Japanese research projects has increased from 11,972 to 19,811. All things considered, the years 1991-1993 happened to fall in the transition period between the National Economics and Social Development Plan V and Plan VI implementation, when there was a surge of interest in research development and a better budget for research which continued to grow steadily. Hence the unusual surge in the number of educational research projects in Thailand.

Finally, in the past five to six years, the Thai Ministry of Education urged school teachers to conduct research, and built this into a career incentive structure. Hence a surge in educational research projects by school teachers. However, there is a trend that the number of educational research projects may drop because of a recent shift in policy that teachers can be promoted without having to conduct any research. Despite this fact, the number of research projects as a whole should not be affected since teachers’ work (although not in a conventional definition of research work* it is more or less research*) involves the development of teaching techniques, educational media, or classroom management.

In conclusion, it can be seen that many factors have triggered the unusual increase of research projects in Thailand with an increasingly upward trend, compared to a steady increase of research projects in Japan. It should also be noted that there is a marked difference between Thai and Japanese research environment, especially when one looks at the total number of research projects. Although the inadequate Thai database system and different definitions of research work in the two countries may offer some explanation of a staggering contrast between the number of research projects, there must be some other factors that give rise to such a disparity. The most significant factors could well be economic conditions, the size and type of population, the level of public and private sector financial support for educational research, and the administrative system that gives a high priority to educational research. If educational reform in Thailand is successful, investment into research must be much higher, and if the necessary supports are provided, one can be optimistic that research in Thailand will progress at a more rapid rate than in the past.

3. Research methodology

It was found that both Thailand and Japan typically conducted research using survey techniques. For Thailand, the reason might be that survey technique is the basic foundation for all other techniques. Survey research becomes the first choice for novice researchers. At present, while the database system is being developed in Thailand, there is no
comprehensive research database as such, and it is therefore necessary to conduct survey research to pinpoint general conditions and problems. Once the research database is improved to the point that it is up-to-date and comprehensive enough, such techniques as experimental or analytical methods would be more common. The research database can then be utilized for research purposes that require more sophisticated techniques. In Japan, the reason for the highest popularity in survey research is that it is more convenient than any other techniques and that it is inexpensive, especially in terms of transportation expenses, as well as less time-consuming, and easier data analysis when modern computers and technologies are available. It was found that 40.5% of Japanese researchers analyzed data manually, which shows that the research in Japan does not utilize complicated statistical procedures. Second to survey research, analytical and historical methods are also popular among Japanese researchers. This might be possible when research databases are up-to-date and comprehensive. The research process would be facilitated and the results more comprehensive and reliable. Besides, there is no need to disturb respondents, who may be working, by questionnaire or interview. Working hours in Japanese culture are considered precious and the golden rule is to avoid any disturbances, unless they are absolutely necessary. Moreover, in Japan it is felt that other methods like experimental research must be conducted with utmost care, especially when people are directly involved, since there might be a problem of human rights violation. In light of what happens in Japan at the moment, the issue of whether to use questionnaires or interviews is a difficult one, as the ethics of conducting different types of research. Potentially repeated requests to complete questionnaires, to answer interview questions, or to express opinions as a part of survey research, if used too frequently, would interfere with office work and invariably increase workload. Fortunately, such incidents are less serious in Thailand than in Japan. One explanation might be that Thai people, when asked for a favor, feel obliged to help or do not know how to refuse. They might do it half-heartedly, resulting in distorted data. In the future this problem might be more prevalent in Thailand. Such issues therefore must be taken into consideration. One way to alleviate the problem is to develop a comprehensive research database which could minimize repetitions in survey research. Additionally, researchers might choose to gather data from secondary sources, which is becoming increasingly popular in Japan. Another interesting phenomenon in Japan is that more Japanese researchers will do survey research internationally possibly to avoid the problems of data collection, research ethics violation (experimental), and heavy costs. It is likely that more researchers will conduct research in Thailand because the expenses are lower. This will benefit Thailand somehow. Thailand should encourage any kind of collaboration and support such research efforts because there will be returns in terms of both research results and new learning from the process of information exchange and sharing of experience. In the meanwhile, various measures and regulations must be established in a way that Thailand will gain most benefits while facilitating Japanese research activities.

Another conclusion drawn from this research is that there is a lack of longitudinal studies in both Thailand and Japan on a given research topic, and investigations which can generate a unified set of knowledge. This shortcoming may stem from insufficient research funding resulting from the sponsor approval of research budget or the trends in that particular period. Another reason could be rooted in the nature of educational research itself. Because such research almost always deals with people, who keep changing constantly, it is extremely difficult to conduct research with the same group of subjects for a long period of time. In the future it would be desirable for sponsors, organizations, and researchers to reconsider this issue and support more longitudinal studies in order to gain more knowledge in depth which is unified rather than unorganized chunks of knowledge or disconnected pieces of puzzles at the moment.

An interesting issue revealed in this research is that both Thailand and Japan conduct more quantitative than qualitative research. The trend is that there will be a combination of both quantitative and qualitative research in the future for a deeper and more accurate understanding of the issues being studied. In anticipation of this trend and with a view to achieving quality outcomes, it would be advisable for the sponsoring organizations to encourage researchers to acquire knowledge of and to be able to do qualitative research as well as to combine the two techniques of quantitative and qualitative research. In addition, with such a trend and a keen interest on the part of the researchers, there should definitely be a collaboration between Thai and Japanese researchers to conduct qualitative research. In this way both parties will be able to learn from each other and to reap mutual benefits in the end.

Recommendations
The following recommendations were made by Khemmani et al. (1998) for both Thailand and Japan in improving their research potentials:

For Thailand, a feasibility study of the establishment of an agency whose sole responsibility is to oversee and supervise educational research directly should be conducted as a basis for decision making in research policy.

Thailand and Japan should collaborate in the study on research topics of mutual interest. Such topics may include teacher and curriculum development, teaching and learning process development as well as educational management restructuring. Both countries could benefit from each other through conducting collaborative research. Japan has an extensive database, rich experience and skills and in historical research and in the area of special education, early
childhood and non-formal education whereas Thailand is quite skillful with quasi-experimental research and possesses experience and data in the areas of educational measurement and evaluation.

The data indicated that many higher education institutions and organizations in Japan did not have research plans. It is therefore recommended that Japan do further studies to uncover the fact which may lead to a better development of national research in both quantity and quality.

Both Thailand and Japan suffer from limited research result dissemination due to financial constraints. This has led to the under utilization of research results. It is therefore recommended that sponsors consider providing sufficient research grants to cover the cost of research result dissemination. Because the expenses incurred in conduction of research are quite high, it is essential that research results be utilized to the best possible extent to justify the investment. Support for research dissemination should be fully provided.

Since both countries still lack an effective assessment system for research, it is recommended that both countries collaborate in conducting research in this area. In the next decade, around year 2007, there should be a confirmatory study to find out how accurate the predictions made in this study are.

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