Abstract- A survey of success stories of interdisciplinary research and development projects from various countries worldwide. The first success story is from Thailand with the case of royally supported projects which have been highly beneficial to all concerned. The second success story is from the US which is supposed to be one of the most, if not the most, developed country. The third success story is from the UK representing Europe. The fourth success story is from China which has the highest member of population. The fifth success story is from Korea which is the country with the highest penetration of broadband Internet.

Keywords- Interdisciplinary Development, Interdisciplinary Research, Success Stories.

I. INTRODUCTION

Searching for “Interdisciplinary” from Google, 4,700,000 entries were found as shown in figure 1.1

The term “Interdisciplinary” implies involvement with “Two or more disciplines”. For example, the subject of “Land use” may involve Biology, Computer Applications, Geography, and etc.

With the popularity of the subject of “Internet”, most interdisciplinary research and development projects in the year 2011, involve the applications of the Internet and related technologies.

Clicking Wikipedia for details on “Interdisciplinary”, the system redirects to “Interdisciplinarity” as shown in figure 1.2

Several interesting points from the Wikipedia article are

1. T. Ausburg, in the book “An Introduction to Interdisciplinary Studies” in 2006, stated that the concept of interdisciplinary was started by Greek philosophers long time ago.

2. The barrier in interdisciplinary projects is that most participants were trained in traditional disciplines and find it difficult to adjust to differing perspectives and methods.

3. The number of interdisciplinary Bachelor’s Degree in the US increased from about 7,000 per year in 1973 to about 30,000 per year in 2005.

4. Sample interdisciplinary fields such as Philosophy of Science, Integrative Learning, Interprofessional Education, and etc.
II. INTERDISCIPLINARY RESEARCH AND DEVELOPMENT

There are thousands of success stories in Interdisciplinary Research and Development in Thailand. The first sets of examples are H.M. The King’s and HRH Princess Maha Chakri Sirindhorn’s Royal Projects.

Searching Google for “Interdisciplinary Thai Royal Projects”, 1.79 million entries were found as shown in figure 2.1

The first sets of examples are from Sample success stories of the Royal Projects

1. 1968 Ramon Magsaysay Award for research and development leading to the cultivation of highland crops for opium substitution.
2. Research projects have been conducted at 6 experimental stations in Chiang Mai.
3. Self-Help Organizations (SHO) have been established with rice banks, production groups, village committees, and cooperatives
4. Since 1995, HRH Princess Maha Chakri Sirindhorn’s IT Project has made many significant milestones such as Establishment of Research

The second sets of examples are from several organizations supporting interdisciplinary research and development such as NRCT (The National Research Council of Thailand), NSTDA (The National Science and Technology Development Agency) and etc.

The third set of examples supporting Interdisciplinary Research and Development in Thailand is in the Interdisciplinary Network of the Royal Society of Thailand (INRIT) under the Royal Patronage of HRH Princess Maha Chakri Sirindhorn.

INRIT has established seven branches in seven regions of Thailand: Upper Northern Branch, Lower Northern Branch, Northeast Branch, Central Branch, Eastern Branch, Western Branch, and Southern Branch. The Interdisciplinary Network Foundation for Research and Development, with the Senior Author as the Senior Chairman, to support INRIT. The Interdisciplinary Network Foundation for Research and Development has established Internet Poll Research Center and Institute for Interdisciplinary Research.

III. INTERDISCIPLINARY RESEARCH AND DEVELOPMENT IN THE US

Searching Google “Success Stories R and D Interdisciplinary in the US”, 3.54 million entries were found as shown in figure 3.1

The third sets of examples supporting Interdisciplinary Research and Development in the US are from

1. 1968 Ramon Magsaysay Award for research and development leading to the cultivation of highland crops for opium substitution.
2. Research projects have been conducted at 6 experimental stations in Chiang Mai.
3. Self-Help Organizations (SHO) have been established with rice banks, production groups, village committees, and cooperatives
4. Since 1995, HRH Princess Maha Chakri Sirindhorn’s IT Project has made many significant milestones such as Establishment of Research and Development Center for Assistive Technology, Educational Development for the Disabled, Improving Childhood Nutrition and Health, Conservation of Natural Resources, Environment and Local Wisdom, Community Integrated Development, and etc.
The first set of examples of successful interdisciplinary research and development in the US is ARPA and the Internet:
- 1969, US Defense Department’s Advanced Research Project Agency (ARPA) started the Internet.
- 1979 USENET contributed to the Internet rapid expansion.
- 1991 the World Wide Web (WWW) increased the popularity of the Internet.
- 2011 the Internet is used everywhere.

The second set of examples is about Moon Landing and Space Exploration:
- 1969 the first moon landing by the American Apollo 11 (spurred by USSR’s Sputnik which was in orbit in 1957).
- NASA (The US National Aeronautics and Space Administration) has conducted many interdisciplinary research and development projects.

The third set of examples is about energy-related interdisciplinary research and development by the US Department of Energy:
- to increase energy efficiency
- to improve building technologies
- to improve transportation technologies
- to improve industrial technologies

IV. INTERDISCIPLINARY RESEARCH AND DEVELOPMENT IN THE UK

Searching Google “Success Stories R and D Interdisciplinary in the UK”, 1.96 million entries were found as shown in figure 4.1

Fig. 4.1 Searching Google “Success Stories R and D Interdisciplinary in the UK”, 1.96 million entries were found.

The first set of examples of successful interdisciplinary research and development in the UK is in the field of Computer:
1. Charles Babbage and the first programmable computer which are Difference Engine in 1822 and analytical Engine in 1837. Later versions of the computers are used in interdisciplinary research and development everywhere.
2. Ada Lovelace, the World’s First Computer Programmer. Computer programs or software are as important, if not more important, than hardware. Computer software is used in interdisciplinary research and development everywhere.

The second set of examples is from the UK Medical Research Council (MRC) for about 100 years, MRC has supported interdisciplinary research and development projects. MRC has produced 29 Noble Prize winners such as first antibiotics penicillin, Structure of DNA (Deoxyribonucleic Acid), and Lethal link between smoking and cancer.

The third set of examples in the UK is from the Royal Institution of Great Britain (RIGB), in which the senior author is a Fellow. RIGB has 23 Nobel Laureates who have carried out interdisciplinary research and development such as Physiology and Comparative Anatomy, Astronomy, Crystallography, and etc.

V. INTERDISCIPLINARY RESEARCH AND DEVELOPMENT IN CHINA

Searching Google “Success Stories R and D Interdisciplinary in China”, 1.26 million entries were found as shown in figure 5.1

Fig. 5.1 Searching Google “Success Stories R and D Interdisciplinary in China”, 1.26 million entries were found.
Examples of successful interdisciplinary research and development in China are

1. China ranked 4th in the world in R&D spending with US$ 87 billion in 2009 (US is first, Japan is second, and Germany is third).

2. China to become WHO’s center in traditional Chinese medicine. Chinese Academy of Science (CAS) predicted that China will be leader in such as Stem Cell research and development, Nuclear Fission, Space Science, and Clean Energy.

3. Beijing Institute of Life Science of the Chinese Academy of Science (BOLS, CAS) established by combining Institute of Biophysics, Institute of Zoology, Institute of Microbiology, Institute of Genetic and Developmental Biology, Institute of Genomics, Institute of Psychology, and Institute of Botany to carry out interdisciplinary research and development.

VI. INTERDISCIPLINARY RESEARCH AND DEVELOPMENT IN KOREA

Searching Google “Success Stories R and D Interdisciplinary in Korea”, 861,000 entries were found as shown in figure 6.1

Examples of successful interdisciplinary research and development in Korea are

1. Korea Institute of Science and Technology (KIST) founded in 1966. KIST carry out interdisciplinary research for economic growth and modernization of engineering fields. KIST became the world’s first institute to develop spin-transistor technology which is the core of the next-generation semiconductor industry. KIST has been conducting interdisciplinary fusion technology, neural science, computational science, and human interface technology.

2. Korea Science and Engineering Foundation (KOSEF) established in 1977. KOSEF carry out basic and apply research such as Nano-Technology, Bio-Technology, Energy and Environment Programs, Space R&D Programs, and Nuclear R&D Programs.

3. National Research Foundation of Korea (NRF) founded on 26 June 2009 by combining Korea Science and Engineering Foundation, Korea Research Foundation, and Korea Foundation for International Cooperation of Science and Technology. NRF supports International Joint Research, Base formation for globalization, and Base construction for global R&D.

VII. CONCLUDING REMARKS

In the year 2011, with the airplane, anyone can go anywhere in the world in just one day. In the year 2011, with the Internet, anyone can go anywhere in the world in just a minute or so. Therefore, in the year 2011, research and development should be done with interdisciplinary approach.

Not only Thailand, US, UK, China, and Korea but also most other countries have been successful in conducting interdisciplinary research and development.

All interested parties should find more information from Google and other search engines to study, adopt, and adapt to apply in Interdisciplinary Research and Development Projects for the benefits of all concerned.
REFERENCES

(This list of references is arranged in the order of citation similar to the case of footnotes)


