THE DEVELOPMENT OF ECOLOGICAL FAMILY MODEL IN HEALTH PROMOTION

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Thesis
Entitled

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ABSTRACT

The purpose of this research was to develop an ecological family model in health promotion. The study was undertaken by surveying 200 families in Nakornpathom province Thailand, by applying a method of formative research. Population sampling was done by means of stratified sampling. Questionnaires were used as a tool for data collection and were analyzed by means of the Chi-square test. The field examination was conducted with 20 volunteer families who were obtained through purposive sampling. Data was collected through interview and observation and was analyzed by conclusion drawing.

Research findings indicated that families managed the environment in ways that were supportive to their health. First of all, they were perceptive concerning environmental problems that could affect their health ($\bar{x}$ =3.17). Secondly, they had a good attitude toward the environment ($\bar{x}$ =3.78) in regards to food preparation, income earning and external social contacts (p=.05). When organizing the stage for solving environmental problems in the village, families participated in solving the household's solid waste problem. Family members mutually took part in diagnosing the problem, planning and taking an action as well as warning one another. Families developed correct knowledge in solid waste management. The ecological family model in health promotion was a learning process, an adaptation process, and a development process for family members towards environmental problems. Family members cooperatively analyzed a problem, identified the method of problem solving, and each family played a role in environmental problem management that was congruent with the condition and readiness of the family.

In terms of research recommendations, there should be an implementation and evaluation of the results of ecological family models in health promotion in areas that have similar and different contexts in order to obtain a practicable model. There should also be a comparison of the similarities and differences in the application with different target groups and in different area contexts.

KEY WORDS: ECOLOGICAL FAMILY/ HEALTH PROMOTION

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การพัฒนารูปแบบนิเวศวิทยาครอบครัวเพื่อส่งเสริมสุขภาพ

(THE DEVELOPMENT OF ECOLOGICAL FAMILY MODEL IN HEALTH PROMOTION)

สุภาภรณ์ สงค์ประชา 4636198 SHED/D

ศษ.ด. (สิ่งแวดล้อมศึกษา)

คณะกรรมการควบคุมวิทยานิพนธ์: มาณี ไชยธีรานุวัฒศิริ, ค.ด., ประสิทธิ์ ลีระพันธ์, Ph.D., ประวิทย์ เขมะสุนันท์, Ph.D.

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อพัฒนารูปแบบนิเวศวิทยาครอบครัวเพื่อส่งเสริมสุขภาพ ศึกษากับครอบครัวในจังหวัดนครปฐม ใช้วิธีการวิจัยก่อรูป (Formative research) ด้วยการสำรวจครอบครัวจำนวน 200 ครอบครัว สุ่มตัวอย่างแบบแบ่งชั้น เก็บข้อมูลด้วยแบบสอบถามวิเคราะห์ด้วยการทดสอบไคสแคว์ และตรวจสอบในพื้นที่กับครอบครัวที่สมัครใจเข้าร่วมโครงการ 20 ครอบครัว สุ่มแบบเจาะจง เก็บข้อมูลด้วยการสัมภาษณ์ การสังเกต วิเคราะห์ข้อมูลด้วยการสร้างข้อสรุป

ผลการศึกษาพบว่า ครอบครัวมีการจัดสิ่งแวดล้อมที่เอื้อต่อสุขภาพ โดยการรับรู้ปัญหาสิ่งแวดล้อมที่ส่งผลกระทบต่อสุขภาพ ($\bar{x}$ =3.17) มีทัศนคติที่ดีต่อสิ่งแวดล้อม ($\bar{x}$ =3.78) ผ่านบทบาทด้านการจัดเตรียมอาหาร การหารายได้ การติดต่อสังคมภายนอก ($p=.05$) เมื่อจัดเวทีแก้ไขปัญหาสิ่งแวดล้อมในหมู่บ้านครอบครัวมีส่วนร่วมในการแก้ปัญหาขยะมูลฝอยในครัวเรือน สมาชิกครอบครัวร่วมกันวินิจฉัยปัญหา วางแผน และดำเนินการปฏิบัติร่วมกัน มีการตักเตือนกัน ครอบครัวได้รับการพัฒนาความรู้ที่ถูกต้องทำให้มีการจัดการมูลฝอยดีขึ้น รูปแบบนิเวศวิทยาครอบครัวเพื่อส่งเสริมสุขภาพเป็นกระบวนการเรียนรู้ ปรับตัว และการพัฒนาของสมาชิกในครอบครัวต่อปัญหาสิ่งแวดล้อม โดยสมาชิกครอบครัวร่วมกันวิเคราะห์ปัญหา กำหนดวิธีการแก้ไขปัญหา และมีบทบาทหน้าที่ในการจัดการปัญหาสิ่งแวดล้อมที่สอดคล้องกับเงื่อนไขและความพร้อมของครอบครัว

ข้อเสนอแนะ ควรนำรูปแบบนิเวศวิทยาครอบครัวเพื่อส่งเสริมสุขภาพไปใช้ในพื้นที่ซึ่งมีบริบทใกล้เคียงกันและแตกต่างกัน เพื่อให้ได้รูปแบบที่นำไปใช้ได้จริง และเปรียบเทียบความเหมือนและความต่างในการประยุกต์ใช้กับกลุ่มเป้าหมายและพื้นที่ซึ่งมีบริบทไม่เหมือนกัน

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CHAPTER I
INTRODUCTION

1.1 Background and Significance of the Problem

Currently, an ecosystem in Thailand has created an impact on health as a result of deterioration of natural resources and pollution. According to the State of Environment Report in 2005 (Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, 2006), Thailand has the total area of approximately 320.7 million rai, contributing to approximately 131 million rai of own agricultural land tenure or 41 percent of the total country area. Most of the agricultural lands face with the problem of the deterioration of soil condition due to soil erosion, saline soil and acid sulfate soil. A state of water shortage is likely to become more severe in Thailand; drought that occurred in 2005 had caused a vast damage of 7,565.8 million baht (Department of Disaster Prevention and Mitigation, 2005). According to average annual precipitation since 1999, the level of precipitation has been continuously decreasing every year whereas energy is used wastefully, resulting in a gradual decline in energy backup in Thailand and that the country has to become more dependent upon energy import from overseas as well as provide alternative energy, such as, gasohol (average sales volume is approximately 1 million liter in 2005), and bio-diesel (the public sector promote the production and utilization of bio-diesel instead of diesel approximately 720 million liters annually). Biodiversity in Thailand that used to be highly abundant is currently and rapidly declining due to a decrease in forest areas, mangrove forests, coral reefs and other ecosystems. While Thailand is encountering pollution, the amount of wastes in 2004 was as high as 39,956 tons per day whereby 95 percent of the wastes did not have waste management area that met the sanitation standards and were disposed by open-air combustion, land filling or piling. Pollution Control Department reported water quality in 2004 that the surface water that obtained the low level of water quality accounted for 21 percent,

and the surface water with the very low level of water quality contributed to 5 percent. There is also the pollution from small dust particles exceeding the standard in many areas of the country as well as noise pollution around street areas. Mostly in Bangkok, an average noise level is in the range of 64-84 dBA, which exceeds the standard level (70 dBA with 24 hours average) by as high as 74 percent of the total number of measurements. When consider death statistics of Thai populations in 2005, which were categorized by major causes, it was found that the death cased by cancer accounted for 81.4 percent per 100,000 populations; accidents and toxicity accounted for 57.6 percent per 100,000 populations. In term of the number of outpatients who received services at public health service units of Ministry of Public Health in 2005, diseases of the respiratory system was ranked the first (22,754,376 patients), followed by diseases of the digestive system (13,102,750 patients) and certain infectious and parasitic diseases (5,880,252 patients) (National Statistical Office, 2007). When consider the patient statistics from Annual Epidemiological Surveillance Report of Bureau of Epidemiology, Ministry of Public Heath, it was found that during 1990 to 1996 the top ten infectious diseases with the highest number of patients were still in the same disease group, including acute diarrhea, food-borne diseases, dysentery, hhemorrhagic conjunctivitis, common cold, chickenpox, fever of unknown origin (FUO), dengue hemorrhagic fever, malarial fever, pneumonia, and epidemic parotitis. It can be seen that the majority were microbial diseases of the respiratory system and food-borne infectious diseases caused by inappropriate environment, inadequate sanitation of food and water consumption, and contamination of germs and chemical substances, which resulted in the forefront ranking of these diseases (Chuchai Supawong, 1999). Therefore, the tendency of health problems from the environment is more likely to become higher.

In order to reduce health problems, personnel should be promoted to be able to adjust themselves in keeping balance with the environment and having interaction with the environment that will create optimal benefits in life sustenance. There should be an educational support together with environmental support in order to create outcomes of practice in daily life situations to lead to a healthy state. Environmental education aims to create a new behavioral pattern of an individual, a group of people, and a society as a whole that is suitable to the environment (Bishnu, 2002). This is

consistent to factors contributing to Ottawa Charter of Health Promotion, World Health Organization that wants to create supportive environment to health. Health promotion in the 21st century requires a new form of solution; capacity of health promotion that is inherent in various sectors of the society at the community and local level and within the family should be released (Jakarta Declaration of World Health Organization, 1996: 6).

Most implementations of health promotion activities are performed by the government, not truly by the people. Many occurred activities are not congruent with the social context. For example, the promotion of exercise by aerobics is not suitable for a rural community. Activities that are conducted solely by the public health department, without any coordination with other service departments within the area to aim at good quality of life, as well as a decrease in self-health care capacity of the people with greater dependency on health service system result in more health problems. In addition, families that are principle unit of having good health condition are currently becoming weaker and unable to maintain good health condition of the families.

Family has a capacity to create health supportive environment. Good relationship indicates good health condition of the family, both in terms of relationship of the family with the surrounding society (such as neighbors and community, relationship of the family with the sub-systems (such as relationship of the family and kinship system of both sides, and relationship between family members with mutual sympathy by being both a receiver and a giver) (Roberts and Feetham, 1982: 231). Family is the most important environment to individuals and has influences on growth and lifetime development. Whether individuals would have good health or not is always influenced by the family; therefore, family is the unit that should be supported by encouraging family members to have mutual responsibility for self-development and development of everyone in the family at the fullest capacity. To achieve a healthy state, family must perceive value and impact of the environment on health and collectively preserve and look after the surroundings that the family interacts with as if it is a bond of life affecting one another, resulting in ecological family that demonstrates a relationship balance between the family and the environment.

1.2 Research Questions

What are characteristics of ecological family model in health promotion?

1.3 Research Objectives

To develop ecological family model in health promotion.

1.4 Definition of Terms

Model means a pattern that illustrates a phenomenon occurred in a study to convey meaning that is easily understandable.

Ecological Family means a study of relationship between the family and the environment whereby this study focuses on mutual actions among family members that are demonstrated via structure, role and relationship within the family in order to solve environmental problems encountered by the family.

Health Promotion means activity in organizing environment that is supportive to health, occurring from mutual actions between family members.

1.5 Scope of the Thesis Research

This research is the development of ecological family model in health promotion for the families residing in Banglen District, Nakornpathom province. The duration of data collection was from 2006 to 2007. Scopes of this study are not generalization and testable model;

1. Generalization; the researcher does not aim to apply study results in generalization and does not want to be representative in applying study results for reference in other areas as it is the study of relationships of a particular family group with the environment in specific area.

2. Testable model; the ecological family model in health promotion has not been tested for implementation due to time constraint of the study, which is unable to explain efficiency of the model.

1.6 Research Benefits

1. Ecological family model in health promotion is obtained in which the process of family model construction is enhanced by learning and enabling the application of knowledge in daily life.

2. Ecological family model in health promotion is beneficial to the concerned people, including researchers, developers, scholars and those who want to study about the family such as family developer who can apply ecological family model in health promotion into family development planning.

3. Ecological family model in health promotion is the pattern that public health officers can apply into family health promotion by adapting to be congruent with an issue of the area.

CHAPTER II
LITERATURE REVIEW

This research aims to study the relationship between the family and the environment that the family is residing under the context of the Thai society. The purpose is to develop ecological family model in health promotion. Literature review under principle objectives of the study is begun by the study of basic concepts, including ecology. The study of sociological human ecology and the reflection of Thai-community ecology concerning natural ecology and social ecology aim create an understanding toward family ecology while the study of health promotion concept aims to formulate goals of the development of ecological family model. Then, the principle of formative research is presented, which is used as a research methodology in which the researcher presents in the following topics.

2.1 Ecology
2.2 Sociological Human Ecology
2.3 Situation of Thai-community Ecology
    2.3.1 Natural Ecology
    2.3.2 Social Ecology
    2.3.3 Family Ecology
    2.3.4 Health Promotion
2.4 Formative Research

2.1 Ecology

2.1.1 Meaning

The term ecology or oekologie was coined by the German biologist Ernst Haeckel in 1866, when he defined it as “the science of the relations between the organism and the outer world” (cited by Fritjof Capra, 1996: 33).

Ecology (from Greek: οίκος, oikos, "household"; and λόγος, logos, "knowledge") is the scientific study of the distribution and abundance of life and the interactions between organisms and their natural environment. The environment of an organism includes physical properties, which can be described as the sum of local abiotic factors such as insolation (sunlight), climate, and geology, and biotic ecosystem, which includes other organisms that share its habitat.

Ecology is the science of relationships between living organisms and their environment. (Gerald G Marten, 2001:1)

2.1.2 Disciplines of Ecology

Ecology is a broad discipline comprising many sub-disciplines. A common, broad classification, moving from lowest to highest complexity, where complexity is defined as the number of entities and processes in the system under study, is:

- Ecophysiology examines how the physiological functions of organisms influence the way they interact with the environment, both biotic and abiotic.
- Behavioral ecology examines the roles of behavior in enabling an animal to adapt to its environment.
- Population ecology studies the dynamics of populations of a single species.
- Community ecology (or synecology) focuses on the interactions between species within an ecological community.
- Ecosystem ecology studies the flows of energy and matter through the biotic and abiotic components of ecosystems.
- Systems ecology is an interdisciplinary field focusing on the study, development, and organization of ecological systems from a holistic perspective.
- Landscape ecology examines processes and relationship across multiple ecosystems or very large geographic areas.
- Evolutionary ecology studies ecology in a way that explicitly considers the evolutionary histories of species and their interactions.

- Political ecology connects politics and economy to problems of environmental control and ecological change.

Ecology can also be sub-divided according to the species of interest into fields such as animal ecology, plant ecology, insect ecology, Marine Ecology, and so on. Another frequent method of subdivision is by biome studied, e.g., Arctic ecology (or polar ecology), tropical ecology, desert ecology, etc. The primary technique used for investigation is often used to subdivide the discipline into groups such as chemical ecology, genetic ecology, field ecology, statistical ecology, theoretical ecology, and so forth. These fields are not mutually exclusive.

Ecology can be studied at a wide range of levels, from large to small scale. These levels of ecological organization, as well as an example of a question ecologists would ask at each level, include:

- Biosphere: "What role does concentration of atmospheric carbon dioxide play in the regulation of global temperature?"
- Region: "How has geological history influenced regional diversity within certain groups of organisms?"
- Landscape: "How do vegetated corridors affect the rate of movement by mammals among isolated fragments?"
- Ecosystem: "How does fire affect nutrient availability in grassland ecosystems?"
- Community: "How does disturbance influence the number of mammal species in African grasslands?"
- Interactions: "What evolutionary benefit do zebras gain by allowing birds to remove parasites?"
- Population: "What factors control zebra populations?"
- Individual: "How do zebras regulate internal water balance?"

For modern ecologists, ecology can be studied at several levels: population level (individuals of the same species in the same or similar environment), biocoenosis level (or community of species), ecosystem level, and biosphere level.

2.1.3 The Ecosystem concept

A central principle of ecology is that each living organism has an ongoing and continual relationship with every other element that makes up its environment. The sum total of interacting living organisms (the biocoenosis) and their non-living environment (the biotope) in an area is termed an *ecosystem*. Studies of ecosystems usually focus on the movement of energy and matter through the system.

Almost all ecosystems run on energy captured from the sun by primary producers via photosynthesis. This energy then flows through the food chains to primary consumers (herbivores who eat and digest the plants), and on to secondary and tertiary consumers (either carnivores or omnivores). Energy is lost to living organisms when it is used by the organisms to do work, or is lost as waste heat.

Matter is incorporated into living organisms by the primary producers. Photosynthetic plants fix carbon from carbon dioxide and nitrogen from atmospheric nitrogen or nitrates present in the soil to produce amino acids. Much of the carbon and nitrogen contained in ecosystems is created by such plants, and is then consumed by secondary and tertiary consumers and incorporated into themselves. Nutrients are usually returned to the ecosystem via decomposition. The entire movement of chemicals in an ecosystem is termed a biogeochemical cycle, and includes the carbon and nitrogen cycle.

Ecosystems of any size can be studied; for example, a rock and the plant life growing on it might be considered an ecosystem. This rock might be within a plain, with many such rocks, small grass, and grazing animals -- also an ecosystem. This plain might be in the tundra, which is also an ecosystem (although once they are of this size, they are generally termed ecozones or biomes). In fact, the entire terrestrial surface of the earth, all the matter which composes it, the air that is directly above it, and all the living organisms living within it can be considered as one, large ecosystem.

Ecosystems can be roughly divided into terrestrial ecosystems (including forest ecosystems, steppes, savannas, and so on), freshwater ecosystems (lakes, ponds and rivers), and marine ecosystems, depending on the dominant biotope.

2.1.4 Ecosystem productivity

In an ecosystem, the connections between species are generally related to food and their role in the food chain. There are three categories of organisms:

- *Producers* -- usually plants that are capable of photosynthesis but could be other organisms such as bacteria around ocean vents that are capable of chemosynthesis.
- *Consumers* -- animals, which can be primary consumers (herbivorous), or secondary or tertiary consumers (carnivorous and omnivores).
- *Decomposers* -- bacteria, mushrooms which degrade organic matter of all categories, and restore minerals to the environment. And decomposers can also decompose decaying animals

These relations form sequences, in which each individual consumes the preceding one and is consumed by the one following, in what are called food chains or food networks. In a food network, there will be fewer organisms at each level as one follows the links of the network up the chain.

2.1.5 Dynamics and Stability

Ecological factors that affect dynamic change in a population or species in a given ecology or environment are usually divided into two groups: abiotic and biotic.

1) Abiotic factors are geological, geographical, hydrological, and climatological parameters. A biotope is an environmentally uniform region characterized by a particular set of abiotic ecological factors. Specific abiotic factors include:

- Water, which is at the same time an essential element to life and a milieu
- Air, which provides oxygen, nitrogen, and carbon dioxide to living species and allows the dissemination of pollen and spores
- Soil, at the same time a source of nutriment and physical support

- Soil pH, salinity, nitrogen and phosphorus content, ability to retain water, and density are all influential
- Temperature, which should not exceed certain extremes, even if tolerance to heat is significant for some species.
- Light, which provides energy to the ecosystem through photosynthesis
- Natural disasters can also be considered abiotic

Biocenose, or community, is a group of populations of plants, animals, microorganisms. Each population is the result of procreations between individuals of the same species and cohabitation in a given place and for a given time. When a population consists of an insufficient number of individuals, that population is threatened with extinction; the extinction of a species can approach when all biocenoses composed of individuals of the species are in decline. In small populations, consanguinity (inbreeding) can result in reduced genetic diversity, which can further weaken the biocenose.

2) Biotic ecological factors also influence biocenose viability; these factors are considered as either intraspecific or interspecific relations.

- Intraspecific relations are those that are established between individuals of the same species, forming a population. They are relations of cooperation or competition, with division of the territory, and sometimes organization in hierarchical societies.
- Interspecific relations—interactions between different species—are numerous, and usually described according to their beneficial, detrimental, or neutral effect (for example, mutualism (relation ++) or competition (relation --). The most significant relation is the

relation of predation (to eat or to be eaten), which leads to the essential concepts in ecology of food chains (for example, the grass is consumed by the herbivore, itself consumed by a carnivore, itself consumed by a carnivore of larger size). A high predator to prey ratio can have a negative influence on both the predator and prey biocenoses in that low availability of food and high death rate prior to sexual maturity can decrease (or prevent the increase of) populations of each, respectively. Selective hunting of species by humans that leads to population decline is one example of a high predator to prey ratio in action. Other interspecific relations include parasitism, infectious disease, and competition for limited resources, which can occur when two species share the same ecological niche.

The existing interactions between the various living beings go along with a permanent mixing of mineral and organic substances, absorbed by organisms for their growth, their maintenance, and their reproduction, to be finally rejected as waste. These permanent recyclings of the elements (in particular carbon, oxygen, and nitrogen) as well as the water are called biogeochemical cycles. They guarantee a durable stability of the biosphere (at least when unchecked human influence and extreme weather or geological phenomena are left aside). This self-regulation, supported by negative feedback controls, ensures the perenniality of the ecosystems. It is shown by the very stable concentrations of most elements of each compartment. This is referred to as homeostasis. The ecosystem also tends to evolve to a state of ideal balance, called the climax, which is reached after a succession of events.

Therefore, ecology is the science of relationships between living organisms and their environment. It is a broad discipline comprising many sub-disciplines such as Ecophysiology, Behavioral ecology, Community ecology, etc. Ecology can be studied at a wide range of levels, from large to small scale. For modern ecologists, ecology can be studied at several levels: population level (individuals of the same species in the same or similar environment), biocoenosis level (or community of

species), ecosystem level, and biosphere level. A central principle of ecology is that each living organism has an ongoing and continual relationship with every other element that makes up its environment. The sum total of interacting living organisms (the biocoenosis) and their non-living environment (the biotope) in an area is termed an *ecosystem*. In an ecosystem, the connections between species are generally related to food and their role in the food chain. There are three categories of organisms: Producers, Consumers, and Decomposers. Studies of ecosystems usually focus on the movement of energy and matter through the system. Ecological factors that affect dynamic change in a population or species in a given ecology or environments are usually divided into two groups: abiotic and biotic.

2.2 Sociological Human Ecology

Human Ecology is about relationships between people and their environment. (Gerald G Marten, 2001:1) Human Ecology may be defined, as the study of the form and the development of the community in human population. (Amos H.Hawley, 1950: 68) The concept of biological ecology is applied to construct the conceptual framework in order to study various issues relating to sociology (Thawatchai Boonchoke explained about "Main Theoretical Perspective in Sociological Human Ecology" : 118-120) such as urban community, social deviant behavior during 1940 and even the conceptual framework on the topic "Human Ecology :A Theory of Community Structure" (1950) of Amos H.Hawley, which pointed out that the major issues of human ecology and ecology are similar; that is, "How do the growth and increase in numbers occur in the midst of environmental changes and constraints?" The major reason contributed to growth and increase in numbers is the collective action of individuals in order to increase effectiveness of utilization from self-habitat. Such collective action to achieve goal is divided into two types: symbiosis relationship and commensalism relationship. Symbiosis relationship means different species have a cooperative or mutually dependent relationship. Commensalism relationship is a competitive interaction between similar living creatures. Hawley called the outcome that occurs from this relationship as a community, making human ecology refer to the

study of the development and changes of human community in terms of model and structure, or what is called morphology.

Ecological organization refers to the model of functional dependency between different groups or institutions of the populations. These different models depend on place and time. Ecological organization reflects the adjustments of the populations based on occasion and environmental constraints. Ecological organization consists of five qualifications as follows:

1. Interdependence
2. Key function
3. Differentiation
4. Dominance
5. Isomorphism

Hawley noted that organizational change often occur among human population. Organizational change is typical and is part of the ecological development whereby organizational change that occurs will lead to a state of balance.

The work of Hawley contributed to the knowledge called “Sociological Human Ecology,” which leads to the development of “the Ecological Complex Approach” and “the Sustenance Organization Approach”.

2.2.1 Ecosystems and Ecological Complexity

The starting point of human ecological theory is an attempt to explain how the populations have survived (Frisbie and Clark, 1979). In ecological aspect, the answer is that humans have survived due to collective organization (Gibbs and Martin, 1959).

Duncan applied the flow concept to explain systematic flow of energy, mass and information in the social system, by explaining that social organization indicates human adaptation in order to encounter an unavoidable situation, such as, competition or group protest by using developed technology by POET Model (Thawatchai Boobchote, n.d.: 130).

-P=Population means group of humans that have mutual responsibilities (Berry and Kasarda, 1977)

-E=Environment means anything that are external, but have the ability to have an influence over studied phenomenon (Hawley, 1968)

-T=Technology means information, techniques and tools that human used for exploitation of environmental resources as well as techniques that people utilize the environment for sustenance. It can be divided into 3 dimensions: material dimension, which is tools; information dimension, which is knowledge, techniques and scientific discovery; and energy dimension.

-O=Organization means all networks of symbiotic and commensalistic relationship that enable the sustenance of the populations in the environment.

These four variables have interactive relationship. This relationship is the ecological complexity, which results in "ecosystem theory".

The main purpose of ecosystem theory is to establish conceptual framework to explain morphology of ecological relationship. This theory also aims to explain the establishment of the organization and organizational structure.

2.2.2 The Sustenance Organization Approach

Hawley defined ecological organization as "the broad and general term used to refer to the complex of functional interrelationships by which men live" (Hawley, 1950: 178) and defined "organization" as the management that enables different organizational units to achieve their roles. Later, Gibbs and Martin (1959: 30) provided the definition of sustenance organization that it should begin with the concept that populations are the coalition of individuals to do activities for survival or for mutual sustenance. Sustenance organization has 8 important characteristics (Thawatchai Boonchote, n.d.: 131) as follows:

2.2.2.1. Sustenance differentiation consists of two sub-dimensions. The first dimension is the number of sustenance activities in the population group (structural differentiation), meaning a consideration on the extent of differences to which that population group contains the unit that conducts activities for sustenance.

The second dimension is an equal distribution of members of those populations into sustenance activities (distributional differentiation), meaning a consideration on the extent to which the distribution of the number of members of populations to conduct each sustenance activity is in an equal proportion. Sustenance differentiation will be high when the populations have a number of sustenance activities and the population members are dispersed to conduct those activities in an equal proportion.

2.2.2.2. Functional dependency: Hawley (1950:178) mentioned about interactive complexity among populations, which is consistent to the concept of Durkheim, that division of labor has deeper meaning than sustenance differentiations. In addition to the consideration on the different number of sustenance activities and dispersion of population members into different activities, there should be a consideration toward the level of exchange of products and services between population members (that have different occupations and talents). This exchange is functional dependency and division of labor to build expertise is, therefore, an important factor in supporting functional dependency.

2.2.2.3. Differentiation by Ascription means whether the population ask or assign or do "not" assign their members to conduct any activities for sustenance by a particular "ascription," such as, gender, education, nationality or religion.

2.2.2.4. Bureaucratization: The organization will become bureaucratic when it has systematic characteristics, continuous management, rules and regulations of the organization that have characteristics of using specific ability to work, logical decision-making, level of authority, and constant working (Frisbie,1975)

2.2.2.5. Sustenance Productivity may be measured in productivity per head in order to compare between groups of the population.

2.2.2.6. Efficiency of Productivity is measured from a comparison between the amount of productivity of that population group and the amount of energy used in a production process.

2.2.2.7. Hierarchical location means arrangement of the location of population group when compare to other population groups by considering how much influence that population group has on other populations, which is depended on sustenance building rate to other population groups and the ability to act as a medium or to enable the flow of sustenance to other population groups.

2.2.2.8. Level of sustenance involvement: We may consider the populations in term of involvement in sustenance functions. For examples, in one population group, involvement in production activity may be greater than construction, transportation and communication.

Human ecology perceives the relationship between humans and environment, which is the concept for perception of the relationship between family and environment whereby the family obtain ecological quality of the organization; that is interdependent, playing major roles, different, having an influence over, and having similar morphology. Family is cooperatively established as one of the human organizations. Within the family, the populations are the family members where there is a surrounding environment, technological usage and an organizational characteristic within the family or an action in response to the environment in daily lives for sustenance.

2.3 Situation of Thai-community Ecology

2.3.1 Natural Ecology

In studying the behavioral patterns or actions of the family members that are in response to the environment in daily lives, the environment means everything that is surrounding the family , both biotic components and abiotic components, and both physical and abstract (natural ecology), and have connecting influence that are mutual supporting factors. An impact from one factor will enhance or destroy another part avoidably. The environment is a circuit and cycle that is related to the whole system (Department of Environmental Quality Promotion, 2002). The meaning of the environment according to Environment Protection and Conservation Act B.E. 2535 (A.D. 1992)., section 4, is defined as surroundings that have physical and biological characteristics surrounded humans and derived from the nature and manmade.

The environment can be divided into 2 types as follows:

1) Natural environment or physical environment refers to the environment that occurs from the nature itself, which also includes biotic resources

and abiotic resources. This type of the environment consists of forest, mountain, soil, water, air and all kinds of natural resources.

2) Manmade environment are things created by human, including abstract environment. This type of the environment consists of communities, cities, buildings, archaeological site, work of art, architecture, society, customs and traditions, and culture.

At present, families have to face with environmental problems, which are the problem of depletion of natural environmental quality concerning soil, water, air, minerals, forest, animals, plants, natural scenarios and ecosystems as well as the depletion of manmade environment. Typically, the deterioration of the environment that occurs from changes of human surroundings, which are usually in gradual characteristics that accumulate toxicity up to the crisis point that is dangerous to human's lives. However, it depends on the environment in each area, which has different carrying capacity of wastes due to human activities because it naturally has the ability to wash away and adjust toxic condition to be in a state of balance. However, if the amount of toxic in the nature exceeds carrying capacity, the occurred impacts are the depletion of water quality, air quality and residence, and shortage of natural resources, such as, forests and minerals. Environmental problems can be divided into 2 characteristics:

1) Resource depletion occurs with non-renewable resources, for instances, oil, minerals and natural gas, or renewable resource but lack of on-time response to consumption.

2) Pollution occurs from foreign bodies contaminated in the environment up to the level that can cause danger to human's heath, to biotic resources and ecosystem. Pollution consists of water pollution, air and noise pollution, toxin problem and waste problem.

According to the State of Environment Report in 2005 (Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, 2006), Thailand has the total area of approximately 320.7 million rai, contributing to approximately 131 million rai of own agricultural land tenure or 41

percent of the total country area. Most of the agricultural lands face with the problem of the deterioration of soil condition due to soil erosion, saline soil and acid sulfate soil. A state of water shortage is likely to become more severe in Thailand; drought that occurred in 2005 had caused a vast damage of 7,565.8 million baht (Department of Disaster Prevention and Mitigation, 2005). According to average annual precipitation since 1999, the level of precipitation has been continuously decreasing every year whereas energy is used wastefully, resulting in a gradual decline in energy backup in Thailand and that the country has to become more dependent upon energy import from overseas as well as provide alternative energy, such as, gasohol (average sales volume is approximately 1 million liter in 2005), and bio-diesel (the public sector promote the production and utilization of bio-diesel instead of diesel approximately 720 million liters annually). Biodiversity in Thailand that used to be highly abundant is currently and rapidly declining due to a decrease in forest areas, mangrove forests, coral reefs and other ecosystems. While Thailand is encountering pollution, the amount of wastes in 2004 was as high as 39,956 tons per day whereby 95 percent of the wastes did not have waste management area that met the sanitation standards and were disposed by open-air combustion, land filling or piling. Pollution Control Department reported water quality in 2004 that the surface water that obtained the low level of water quality accounted for 21 percent, and the surface water with the very low level of water quality contributed to 5 percent. There is also the pollution from small dust particles exceeding the standard in many areas of the country as well as noise pollution around street areas. Mostly in Bangkok, an average noise level is in the range of 64-84 dBA, which exceeds the standard level (70 dBA with 24 hours average) by as high as 74 percent of the total number of measurements.

Sustenance of the families in response to the environment in daily lives that is related to behavior and decision-making requires the creation of morality concerning the environment in order for the families to sustain congruently with the environment. The creation of new behavioral patterns of individuals, families and over society that are appropriate to the environment will help create balance between human and the environment under constant changing from the development. Life cycle of the family changes according to the time dimension. Current families apply natural

resources and the environment by realizing sufficiency in response to different needs in sustenance of the families of the next generations.

The concept of the United Nations Conference on Environment and Development (UNCED) relating to sensitivity, participation of the populations in solving environmental problems and educational development will help people realize about the environment and morality. Having values, attitudes and behaviors that support sustainable development (Agenda 21) are congruent with the concept and principle of environmental education practice according to Belgrade Charter in 1975. Environmental education is the process that makes people perceive value and have realization and understanding toward mutual living of natural environment, economic, social and political environment by providing an opportunity to every person in developing knowledge, attitude and decision-making skill in order to create change in attitude and behavior that will protect and improve the environment as well as establish the new pattern of sustenance for the environment at individual level, group level and social level (IUCN, 1970). The original concept of environmental education put forward in 1977 by the Tbilisi Conference, which set out three goals: (1) to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas; (2) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment, and (3) to create new patterns of behaviors of individuals, groups, and society as a whole towards the environment (UNESCO and UNEP, 1977; Bishnu, 2002: 166).

2.3.2 Social Ecology

The Thai society is a modern agricultural society that has more application of science and machinery knowledge into production as well as processes of agricultural products for trading as industrial goods. Changes in the way of lives of the Thai people as a result of technological advancement lead to the problem of deterioration of natural resources and pollutions. As previously mentioned, currently there are 63,038,247 populations in Thailand (Registration Division, Local Administration Department,

2007), which requires an allocation of resources from the areas of 320.7 millions *rai*. Furthermore, population distribution is highly concentrated in urban areas, especially in Bangkok which is the capital city and suburban areas because they are developed areas and the center of politics, government administration, education, commercials and transportations. Consequently, there is the growth of populations from in-migration for settlement more than the growth by nature. When considering the Thai population structure, it is found that the population structure has changed in a way elderly aged 60 and above tend to increase in which it is expected to reach 15.9 percent in 2020 whereas the group of populations aged 0-14 tend to decrease from 25.3 percent currently to 19.1 percent in 2020. On the other hand, the labor group aged 15-59 will experience a slower growth rate from 65.3 percent currently to 64.9 percent in 2020. Changes in the population structure have impacted the structure of the Thai families. It can be seen that there is the greater tendency of change from an extended family to a nuclear family. At present, size of the family is at an average of 4.1 persons per family and it is expected to decline to 3.4 persons in 2015 (Choochai Supawong, 1999). Since family is a fundamental unit of the society, changes within the society affect the families and in turns changes in the families also affect the society unavoidably, Family is the most important environment to individuals and has influences on growth and lifetime development. Whether individuals would have good health or not is always influenced by the family; therefore, family is the unit that should be supported by encouraging family members to have mutual responsibility for self-development and development of everyone in the family at the fullest capacity. To achieve a healthy state, the researcher will present data on ecological family, beginning with meanings, role structure of the family, family system, family development, Thai families, and ecological perspectives on the family as well as present the concept of health promotion, which is the goal of action process in this study.

2.3.3 Family Ecology

2.3.3.1 Definitions of Family

Family is one form of the relationships between individuals. The type of the family varies according to the environment that people are living in. Many scholars provided various definitions. For examples, family is a group of people that have relationship and live together; it also works as the major institution that is highly important to sustenance. There are many types of the family in addition to a complete family consisting of father, mother and child (Family Institution Development Policy and Strategy in 2004-2013 by Office of Women's Affair and Family Development, Ministry of Social Development and Human Security). Family is the social institution of the people; it refers to the relationship of each individual that varies according to age and gender, which is the result of physical relationship of mutual living and maintenance of mutual activities as well as combining individual differences into the same structure (Hawley, 1950: 211). Family demonstrates characteristics of functional relationship of individuals. Marriage demonstrates the relationship between husband and wife. Blood relation is the relationship between father, mother and child as well as children-in-law; the family members may live together in the same household or live separately. In the past, the family would have about 3-5 generations, but currently the family size will be smaller, which may include only husband, wife and child. Family if the unit of feedback communication between individuals such as husband wife, father, mother, children and siblings whereby each society will identify the roles of each member based on each local tradition. Each member within the family will have mutual interaction and care as well as mutual commitment. Family must transfer and prolong cultures in which the family members will transfer and accept mutual behavior (Burgess and Locke, 1953: 7).

2.3.3.2. The Structural – Functional Family

Family is the system with mutual existence of subcomponents and relationship, which enable us to perceive the relationships of each unit and activity conducts for sustenance as a whole. The structural – functional family theory enables us to perceive the structure and the function of the family that are different from other systems within the society. Characteristics of the relationship of subcomponents within the family that affect the family structure (Friedman, 1986) are role structure, value system, communication process and power system. It is the study of the family

structure that is related to lifestyle and affects the functions of the family (Ruja Poopaiboon, 1991: 52-58).

1) Role structure: Role is the behavior that individuals indicate their current status (Kanchana Poosawang, 1990). Such role and status is the model for preaching individuals' behavior in order to enable them to have relationship with others congruently. Family with good role structure is the role practiced within the family that is not in contradiction to what is being expected by an external society. For example, father and mother should play their roles as a guidance, protector and teacher of their child whereas the child should pay respect to a parent. The role of each member should be congruent to one another and should support the role of one another. For instances, in response to the demand of husband and wife, there must be congruency and no contradiction and both will play their roles in satisfying each other; the role display of each member is precise; it should be able to respond to the need of each member; and when necessary each member can have role adaptability in order to respond to the need of the family.

2) Value system: Value system is the system of thoughts, beliefs and attitudes that are derived from learning within the family and may be influenced by the environment outside the family. Value system is transferred from old generation to the next generation. Generally, people will be considerably influenced by value implant from the family. The structure of value system illustrates the principle of family lifestyle. If the family has value system that is similar to a new society, that family will live happily and be able to easily get along with people outside the family.

3) Communication process: Living together in group that has a close relationship, such as a family, requires good communication in order to enable the family to fully play its roles and achieve cohesiveness among the family members. There are many forms of communication and many definitions provided. It can be concluded that communication is a process of perception of information, opinion, value as well as individual's and others' feeling, and it is the way that enables individual to know oneself and others better (O' Brien, 1978). Important components of communication are sender, message, channel and receiver.

4) Power system: Power means one member within the family is able to control or influence on behavior of other family members. Power system is the structure that has the most influence on interaction within the family. Power system of the family can be analyzed from the decision-making process of the family. An evaluation of information relating to power system requires the information from power base of the family members. Decision-making of the family and other factors influencing family power will enable us to know overall power system of the family on how the members within that family interact and how the process of daily lifestyle relates to other members.

2.3.3.3 Family System

System means a group of unit that has a relationship and displays linking behavior in certain characteristic (Constantine, 1986). System theory involves family system, relationship of the family system, boundary of the family, subsystems of the family and adjustment of the family.Family System Theory considers the family as the system of mutual relationship of units with linking behaviors, consistent mutual actions and interdependent with other things (Ruja Poopaiboon, 1991: 37). Family is one of the systems (C.Morgaine, 2001), which consists of:

1) Mutual relationship between units and structure: Units of the system are members of the family; each unit has specific characteristic and has relationship between the units, which is interdependent functional relationship. Overall structure or result is the mutual relationship between each unit as well as members within the system and outside the boundary between the system and the environment of the system (Pratt, 1976; Parsons, 1996).

2) Forms of mutual actions: The patterns of mutual actions contribute to balance of the family.

3) Having boundary and being able to perceive continuance from opening to closing: All systems have method of combining units and separating units as clear division line within and outside the system. If the family system can be absorbed and has unclear boundary, it means that there is an opening; an open boundary system allows the external units and situations outside the family to have an influence on the system. A close system separates the family from the environment

and seems to have isolation and lack of socialization. There is no absolute open or close family system (Pratt, 1976).

4) Working with law components: All are what greater than the total of each of its part. Even though every family system originates from personal unit physically, overall picture of the family and importance is the reflection of overall quality. Specific behavior may be the reason for all systems, which can not be explained by individuals.

5) Language usage and rules for preaching members: Words and rules are the relationship agreement, which identifies and limits behaviors of the family members. There are many times if it is revealed or written it will become an empowerment. For example, when they think of doing something wrong, there will be behavioral control or limit in order to reduce or avoid doing such negative behavior; words and rules will remain only in a few words such as “much better”, “being responsible” and “excellent”.

6) Having subsystems, which is the relationship of small groups deriving from 2-3 persons. In these subsystems, there are rules, boundaries and specific characteristics in which members change them at any times (Pratt, 1976).

In a family-centered approach, it is found that family is one of the systems that is interdependent and consists of subsystems. Family has an influence on every family member in a circular chain reaction. Family has consistent changing and equifinity. It is explained that the same situation can lead to different outcomes, and the same outcome may come from different situations. Family has communication as well as homeostasis and morphogenesis characteristics (Christie & Rebecca, 1996).

The family system, therefore, has structure, roles, boundary keeping of the family, and subsystems as a component of the family. At the same time, there is also adjustment of the family in order to maintain balance, by having the details of boundaries, subsystems and adjustments of the family (Ruja Poopaiboon, 1991) as follows:

1) Family boundary: Boundary refers to the frame line around the system that is an imagination line, which has the ability to open at different levels

in order to enable energy exchange between inside and outside the system. The boundary may be called a "filter" that allows energy exchange through the boundary and the environment at different levels. If the boundary or 'filter" is highly opened to energy exchange, there will be a high interaction between the system and the environment. In case of low openness to energy exchange, there will be a low interaction between the system and the environment. The ability of the boundary of the family to control inputs from the environment to be at the controllable level indicates that it can maintain balance within the family. If case that the family imports less useful sources from the environment, that family must become self dependent or dependent upon the family surroundings more than the family that imports more useful sources from the environment.

2) Subsystems: Family is a subunit of the society that has interaction among members by identifying values and specific roles within the family, resulting in a sub-organization in the family which is categorized by the roles identified by the society. One woman may have the role of wife, mother, daughter and elder sister in the same time, but power and responsibility that she practices will differ according to the subsystem that she is in at that moment. In a nuclear family, it can be divided into 3 subsystems. There are more subsystems in an extended family than a nuclear family; each subsystem has specific function as follows.

a. Spouse subsystem is the system that two individuals have the relationship in the form of married couple and mutual parent.

b. Parent-child subsystem is the system that has role display of parent toward children, and children toward parent.

c. Sibling subsystem is the subsystem of mutual relationship among children by playing the role of siblings.

d. Other subsystem is the subsystem that has specific relation, such as, grandmother and niece, daughter-in-law and mother-in-law, and uncle and nephew, etc.

3) Adjustment of the family: It means the ability of the family to change or adjust behavior of oneself and others in necessary situation in order to maintain balance of the family. A complete family will have flexibility, accepts changes and responds to new stimulus, and not want to stay still or not like to maintain

the same consistent condition. The family may fail to achieve adjustment due to stress within the family that makes member stressed and lose balance to be able to solve problem. Generally, when members within any subsystems are stressed or face with problems of other members, they will offer help. For example, when a husband encounters a problem, a wife may offer help, which leads to problem-solving success in the subsystem of husband and wife. However, if the problem is too severe to be solved, the problem will spread into other subsystems, and finally affect the entire family system, leading to the lack of balance and a crisis that may require sources of help outside the family in order to enable the family to maintain its balance gain.

Therefore, family is the system that has mutual relationship among members both internally and externally, as well as has the connection of behaviors, consistent mutual actions, and interdependency among members and others. The family system demonstrates the boundary, subsystems and adjustment of the family.

2.3.3.4. Developmental Family

Family changes according to the time dimension (Klein & White, 1996). Theory of family developmental focuses on the system and change of experience of the family in association with the family lifestyle. Family is the unit that is able to absorb through and has many time dimensions. Under this concept, scholars have divided family development by describing each stage of the family cycle that is used to study the family differently. For example, Glick (1957) and Duvall (1977) divided phases of the family according to the development into 8 phases as follows:

Phase 1: Early family phase is the phase beginning from marriage until a wife becomes pregnant of the first child. In this phase, married couple must learn about each other and it is the phase that is in an initial stage of establishing wealth and family planning.

Phase 2: Child-raising phase is counted from having the first child until the first is 2.5 years old. In this phase, developmental task of the family is to look after infant that lacks of self-assistant ability.

Phase 3: Pre-school children phase is the phase that the first child is 2.5-5 years old. It is the phase that the family nurtures and teaches discipline to the

new member in order to prepare for a school. It is also the phase that married couple may have the next child.

Phase 4: School-children phase is the phase that the first child is 6-13 years old and able to help himself/herself. The family is responsible for finding a school, helping about study support and looking after the next child.

Phase 5: Teenage phase is when the first child is 13-20 years old. The family has fewer burdens to look after the child because the child can help himself/herself more, but the teenager still needs advice on social values from adults in order to sustain effectively within the society.

Phase 6: New family separation phase is the family that is in the first child phase separates to have own occupation and to get married to have a new family of one's own. The majority are in the phase that children are 20 years old and above; parent can provide suggestions and support to the new family in order to have the strength to stand by oneself.

Phase 7: Middle-age family phase is when most children or all of them separate into the new families, making parent feel lonely. It is the phase that is a preparation for retirement from current work position.

Phase 8: Elderly family phase is often found in European society when husband and wife are entering into elderly age and retired from work, and beginning to face with loss of marriage spouse. The remaining one will be in the condition of loneliness and loss, and then pass away subsequently.

Other scholars divided the development into different phases. For example, Sorokin Zimmerman and Galpin (1931) divided the development into 4 phases, which are early marriage phase, one-child or more phase, child nurturing phase, and older married couple and children's separation phase. Division of the family development is the study of the system and pattern of change of the family according to the period.

The flow of the family cycle that moves the family from one point to another in this cycle makes the society to expect from the role conducts according to each phase that the family is in, which is called "developmental tasks". Duvall (1962) provides the definition of "developmental tasks" as responsibility for growth in each

phase of the family. If the task is accomplished in each phase, it will bring about happiness in life to the family. If it is not accomplished or not done, the family will be unhappy and will not be accepted by the society. It will also has an effect on the family development in the next phase. Developmental tasks of the family in different phases consist of 9 tasks as follows:

1) Family separation
2) Earning sufficient income for family expenditures
3) Appropriate and clear allocation of responsibilities within the family
4) Continuous sexual satisfaction with married spouse
5) Good understanding and communication
6) Good relations with relatives on both sides
7) Interaction with organization and other activity groups in the community
8) Ability to nurture young members
9) Having appropriate life philosophy

Family developmental tasks consist of 3 main purposes (Duvall, 1977 cited by Friedman, 1986: 59), which are to respond to basic physical needs adequately, such as, demand for foods, cloths, shelter and medicines, to be in consistence with social expectation, and to respond to self-needs and beliefs, which refers to emotional response to create satisfaction.

Family has economic responsibility in earning income to financially support the family members; responsibility to respond to physical needs by looking after well-being in daily life, basic treatment when being ill and emotional concerns as well as acceptance of members; and responsibility toward quality development of the family members by teaching to become a good person, supporting learning and developing skills in life sustenance.

Family system has mutual relationship of the members and expression of love, mutual respect and care as well as an opportunity to be together as a whole and do creative activities together. The members reciprocally participate in discussion

and decision-making in important issues of the family and live together peacefully, which is the illustration of a warm relationship in the family.

Family is the system that has an adjustment to maintain balance; therefore, the family must acquire self-dependency in various aspects (National Institute for Child and Family Development) as follows:

1) Economics: This is by having sufficient income for necessary expenditure in sustenance of the family, having money savings that can be used when emergency occurs or when necessary, having no debt or being able to pay out the debt when having debt.

2) Management of family well-being: This is by having stability in residence and members mutually do housework and look after being.

3) Health care: This is by having members mutually look after health, having exercise and recreational activities, having accidental prevention, having no member addicted to alcohol, cigarette and addicted substances.

4) Access to information and social services: This is by enabling members to access, perceive and follow news and information as well as social services in term of public utility (water supply, electricity, telephone, transportation, and postal), social services and social welfare (children development center, school, health center and hospital), recreation and religion (relaxation site and religious place, and capital sources (bank and village fund).

As family is a open system; external situation of the family, therefore, has an influence on the family while the family is also the one to make a decision to get involved with external situation whereby the family members participate in activities for public as a whole and members do not have social resistant behavior or cause trouble in order to support the society of the family.

In short, family means a group of people that has relationship and relationship of each individual is in accordance with roles, that is father (husband), mother (wife) and child.

2.3.3.5. Thai Families

This study of ecological family model in health promotion is the study of the Thai families under social condition that used to be distinctive in term of strong family, system of relatives and long-term bond (Sopa Chapeelaman, 1993: 19).

1) Major characteristic of the family is extended family, especially in rural areas. Members of the family consist of father, mother, children, grandfathers, grandmothers and old relatives.

2) Acceptance of man or husband as the head of the family. Husband is the front legs and wife is the rear legs of an elephant. Husband is responsible for supporting financially in term of economics.

3) A child is a relationship binding chain of the parent as well as grandfathers and grandmothers or aunt and uncle. When there is a small child in the family, all adults tend to pay attention to the child.

4) There is a great blood relation of the family members. Even though parents raise their children until they grow up and have their own family, they still care for their children and help their children in various aspects. At the same time, relatives will mutually help and support one another and give love within the family as follows:

- Conjugal love
- Parental love
- Filial love
- Consanguinal love

5) Give respect to one another according to hierarchical ranking of the family members. Emphasis on the seniority system occurred since childhood in the Thai families; younger siblings must respect and listen to elder siblings, aunt, uncle or other older relatives.

6) A son is esteemed to be a descendant whereby he must be careful about his behavior to be in the moral framework. If there is devastating behavior, it is a ruin of family reputation.

7) Children must demonstrate gratitude to father and mother; that is it is the responsibility of children to provide support and care when they enter old age.

8) Even though a wife is not the head of the family, the wife has a great role in the family by influencing over a husband in nurturing children and financial controlling in the family as well as using voice to display power within the family.

However, the family roles are beginning to weaken and the family size is getting smaller. According to the study of situation and knowledge about childcare in Thailand (Kusol Soontorndara et al: 1999), it was found that smaller household size that changes extended family to nuclear family, migration and greater women's participation in a labor market are the main causes that reduces the roles of the family institution in child nurturing. As a result, a number of children are not raised to obtain appropriate physical development, mental development, emotional development, social development and brain development according to their age. This is consistent to the study by Apichai Pantasen and Duangmaneee Laowakul (1994: 371), which projects the scene of quality of life of Thai people in the next decade concerning smaller family size by explaining that greater expansion of urbanity results in smaller size of the family because of a decrease in the number of children. The main cause that occurs in rural areas is an increase in migration to work in the cities, leading to a broken family, while the primary cause that occurs in the city is a life condition that requires greater struggle for existence; the rate of migration to work is increasing; expenses for residence in getting higher; education level of parents is higher; and achievement results from family planning has made average number of children in the family reduce. Somporn Tepsitta (1995) mentioned about changes in the Thai families in the age of globalization as follows:

1) The family structure has changed from extended family to nuclear family, resulting in less relationship of the family members.

2) Current society offers women more opportunity for education and profession outside the family. Wife must help husband to earn income to support the family, making children to lack of love and warmth from parents.

3) Father and mother are only interested in working, socializing and earning income, which offers no time for children and inadequate love and care for their children.

4) Father and mother do not teach and preach their children as before and do not act as the first teacher of their children who teach moral, virtue and good values in order to become a good member of the society.

5) Material progress and consumerism have made many families to have interests in and search for materials and properties, lack of interests in religion and culture like before, and not send their children to the temple like father, mother, grandfathers, and grandmothers did in the past. Father, mother and children are away from religion, resulting in the lack of morally dependent source.

6) Family face with financial problem and living; income is not sufficient for expenditures, causing debt, quarrel, lack of good relationship, lack of love and warmth as well as lack of stability in the family.

7) Problem of broken family, divorce, separation and abandonment.

8) Media impacts, for examples, radio, television, newspaper, publication, movie and videotape have an influence on thoughts, values, behaviors and expenses of the family and its members.

Currently, the Thai society is the society of globalization with rapid information perception around the world, which is unable to control with technology or governmental law. The Thai society is therefore the society that can accept cultures from every corner of the world, which results in the application of various cultures into the society, such as, fashion, body painting, single-dish food consumption, usage of ads language, leisure time spending in the department stores. There is also a discussion toward raising concerns over the problems in the Thai society, which are the lack of consideration toward good and bad things in life and the lack of mental dependent sources. As a result, when encounter economic problem, people will try to commit suicide as being found in the society, such as, jumping off from the building or hurting oneself with any methods. Drug problem is one of the great concerns of the Thai society that is widespread into all groups. Many types of drugs ranging from inhalants, marijuana and amphetamine have been spreading into the communities, which are difficult for the police officers to absolutely control. The consequences of drug addiction problems contributed to the occurrence of a vicious cycle; that is

stealing, murdering, prostitute and AIDS, which is the cycle that raises great concern for the future of the Thai society (www.rakbankerd.com).

According to the Thai family situation report, it is found that the relationshio of the family is fragile in term of sustenance of the family whereby the rate of marriage registration tend to decrease (In 2002, the rate of marriage registration was equivalent to 16.8 couples per 1,000 households from 26.6 couples in 1996 and 19.8 couples per 1,000 households in 1998). The rate of divorce increases (from 3.7 couples per 1,000 households in 1996 to 4.49 couples per 1,000 households in 2001). Children and elderly are still abandoned from the families due to changes into the society. Elderly and urban society is increasing in its numbers. Form and structures of the family vary and become increasingly complex. The Thai families have changed their form from extended families that have many relatives living together for many generations to nuclear families that consist of husband, wife and child living independently, which makes the family size smaller. The average number of household members was 5.1 persons in 1989 and reduced to 3.79 persons per household in 1999 and to 3.5 persons per household in 2002. The proportion of elderly is higher (in 1980, there was 5.4 percent of elderly and the number increased to 6.7 and 8.7 in 1990 and 2000, respectively). Risk behaviors of teenagers occur, for examples, sexual behavior which results in unwed pregnancy, abortion, sexual transmitted diseases, drug addiction behavior and things contributing to health deterioration.

Family is the basic organization of the society; therefore, changes of the society affect the family whereas changes of the family also affect the society. According to the study results on changes in well-being of Thai people concerning family life from two main components that are warm relationship and economic self-dependent ability, it is found that the well-being of Thai populations concerning overall family life tends to reduce since the economic crisis (1997-1998) whereby prior to the crisis the family life index was equivalent to 68.5 percent and reduced to 66.9 percent when the crisis occurred, and continued to decrease continuously to 63.3 percent after the crisis and in 63.2 percent in 2002. When consider each component, it is found that there was the lack of warmth in the family relationship because sustenance of the family was fragile and there was an increase in living together

without marriage registration as well as divorce. Violence also occurred in the family. Children and elderly were more likely to be abandoned in greater numbers whereas economic self-dependent ability has become an important issue. The families that had income greater than expenditures by more than 10 percent, contributing to 1.8 millions households or 40 percent of the total households of the country, were unable to be self-dependent (Quality of Life and Social Development Office, 2003: 1).

Every family requires adjustments in order to survive. Changes in the surroundings of the family result in their struggle for competition. Therefore, the family has to adjust role structure and responsibilities within the family in order to create balance of living and happiness of the family. National Institute for Child and Family Development, Mahidol University (2545) organized educational project to develop indicators of "family well-being" whereby the purpose is to identify conceptual framework of "family well-being" that is mutually accepted of its appropriateness and congruency with the Thai culture and society by having expertise personnel from various departments and other related experts develop and establish indicators of "family well-being" of Thailand for follow-up and evaluation according to National Development Plan. Indicators are used to study about changes of the family well-being in comparison between before and after the economic crisis in the pilot area and to develop network pattern in order to establish the database according to indicators of "family well-being" for following up with evaluation by defining components of indicators of "family well-being" in 5 components, including 1) family type means structural characteristics that are varied in members' integration that have mutual goal in establishing a family; 2) family role means undertaking roles of the family in looking after the needs and developing overall quality of members, including economics, physical and mental living, development of good humanity as the source of learning and cultural transfer; 3) family relations means interaction of the family members that heightens the relationship, respect, love and sympathy, which can be evaluated from behavior, communication of meaning, involvement in discussion and decision-making and doing activities in peaceful atmosphere; 4) self-dependency means the ability of the family to sustain and maintain structure, roles and good relations whereby both male and female members help one another adjust in the changing society, which can be evaluated from self-care in terms of economics, health

and living management, information access and social services; and 5) virtual social support means involvement of the family in creative activities or social help by not being the one who causes trouble or create social problems.

2.3.3.6. Ecological framework

Scholars applied the ecological framework to explain about the family, which have various concepts (Klein & White 1996:220) as follows:

1) Ecosystem: Hawley (1986) defines ecosystem as "an arrangement of mutual dependencies in a population by which the whole operates as unit and thereby maintains a viable environmental relationship" In Hawley's view, an ecosystem is necessarily a subset of the larger environment (environment being an undefined primitive term) The notion of ecosystem contains the elements of wholeness and the interdependency of parts. For example, we might talk of an urban ecosystem, a desert ecosystem, or a polar ecosystem. Each ecosystem, though attached to other ecosystems, has a set of characteristics that demarcate it as a whole. Bobolz and Sontag (1993) suggest that "a family ecosystem consists of a given family system in interaction with its environment"

2) Niche: Every ecosystem contains *niches*. The interdependencies in an ecosystem are not between specific individuals but between specific niches occupied by individuals. Associated with each niche is a patterned and relatively stable set of activities. These activities provide *functions* for the maintenance or adaptation of units in the environment or those occupying a specific niche. For example, in the human family, the role of father has been tied to the function of provider. According to Hawley (1986), these niches (or social roles) represent functions for the ecosystem. Thus, "the mutual dependencies comprising a system (ecosystem) are seen to be linkages among recurring activities"

3) Adaptive range: An organism that occupies a niche in an ecosystem can be characterized as having an adaptive range. The organism's ontogenetic development gives it a range of behavior, but the organism cannot adapt outside of this range. For example, a 2-year-old is not going to be able to understand the principle of conservation of matter because of his or her developmental stage.

Human intelligence represents a broad adaptive range because we apply technology (culture) to problems we would be hard pressed to adapt to organically.

4) Units: One of the levels of analysis commonly used in evolutionary theory is *population*. Hawley (1986) argues convincingly that a population is not simply an aggregation of all those people or *units* sharing a common characteristic.

5) Ontogenetic development: Every unit within an ecosystem may undergo change that comes about from its own internal structure. Change that is a result of the internal organization and dependencies of parts is called development. For humans, the most important biological part of such developmental change is aging and ontogenetic development. The most important social part of this internal development is experience or maturation. Bronfenbrenner (1979) challenges the very assumption that development can be discussed meaningfully as just occurring within the organism. He argues that development is always a relationship between the organism and its immediate environment. Even though there are challenges to the perspective that internal change of a unit is "developmental", it is nonetheless a useful notion for comparing this type of internal change with external change.

6) Natural selection and adaptation: Prior to Fisher's (1958) proof that mutation could not possibly be a major factor in evolution, there were thought to be two major sources of evolutionary change, mutation and natural selection. Now, we usually consider only natural selection and its correlate, adaptation. Indeed, the concepts of natural selection and adaptation are simply different sides of the same process. Natural selection is a concept about the outcome of adaptation. If an organism or population successfully adapt (survives) to changes in its ecosystem (interrelations among niches), then it has not been "selected". If a population undergoes changes, it is because some poorly adapted organisms were "selected out" and the remaining organisms represent a more adaptive set of alleles for the population. In ecological theory, natural selection is often treated as a population process and adaptation as an individual-level process. But natural selection and adaptation, population and individual, gene pool and gene can all be viewed as components of evolution and ontogenetic development, respectively. An organism's development over time is relatively set by its genetic endowment. Whether or not a particular organism can

adapt to changes in its environment depends on the adaptive range provided by its genetic endowment. If one type of organism is selected out of the population, then the gene pool changes. Thus, the adaptive range provided in the ontogenetic development of the organism interacts with the changing environment to produce the outcome of selection and adaption.

The family is a social organization embedded in a larger kinship network. (Hawley,1986:73) The family occupies a niche in all social systems by providing for the sustenance and nurturance of its internal members while providing the larger society with the reproduction of economic and social organization. (Klein&White , 1996:223)

From the macroscopic perspective of Hawley's propositions, the ecological approach to human development could be interpreted as focusing on Hawley's propositions linking changes in specialization to changes in relationships among functions. Although there is no contradiction between Bronfenbrenner and Hawley, Bronfenbrenner's contribution is significant and should not be trivialized as simply filling in detail for Hawley's macroscopic perspective on human ecology. The distinction between the two complementary approaches lies in what they explore. Hawley examines the linkages between parts of the ecosystem and the general laws that govern the interrelations of these parts. Bronfenbrenner examines individual human behavior as consequence of the interaction between the environment and the person. (Klein & White,1996:226)

Bronfenbrenner proposed a conceptualization of contexts of development in terms of a hierarchy of systems at four progressively more comprehensive levels:

1) The *microsystem*, which involves the structures and processes taking place in an immediate setting containing the developing person (e.g., home, classroom, playground).

2) The *mesosystem*, which comprises the linkages and processes taking place between two or more setting containing the developing person (e.g., the relation between home and school, school and workplace). In the other words, a mesosystem is a system of microsystem.

3) The *ecosystem*, which encompasses the linkages and processes taking place between two or more setting, at least one of which does not ordinarily contain the developing person, but in which events occur that influence processes within the immediate setting that does contain that person.(e.g., for a child ,the relation between the home and the parent's workplace; for a parent, the relation between the school and the neighborhood peer group).

4) The *macrosystem*, which is defined as an overarching pattern of ideology and organization of the social institutions common to a particular culture or subculture. In other words, the *macrosystem* comprises the pattern of micro-,meso-,and exosystems characteristic of a given society or segment thereof. It may be thought of as a societal blueprint for a particular culture or subculture. (Bronfenbrenner, 2005: 80, Gilliss et al, 1989: 24 , Klein & White,1996:228 , Sussman et al, 1999: 354)

From the framework of ecological model of Bronfenbrenner, other researchers applied this model to the study emphasizing different contexts, for example, the study of Vicky C. W. Tam (1998) on the topic, "*Leaving children unattended at home: decision-making on the use of self-care in Hong Kong*". Vicky examines decisions among low-income mothers in Hong Kong on the use of self-care, or the arrangement of leaving children unattended at home. An analysis of individual interviews with 23 mothers, based on family ecology perspective, highlighted the contexts in which mothers make decision based on economic, social and technical grounds. Findings showed that self-care was used with family oriented demands, in spite of the worries and fears associated with the self-care arrangement. Self-care was generally favored when it was felt to be an efficient way of carrying out family and domestic tasks. An argument was also made that self-care encouraged appropriate independence in children. Nevertheless, mothers recognized the risks involved in self-care and planned to minimize the potential dangers of young children being left unattended. The views of the children themselves, as well as their fathers, often influenced the care arrangements made by mothers. Social policies in relation to unattended children are also examined. This analysis reveals ideological assumptions about the nature of good parenting that places great pressure on mother to fulfill their responsibilities even though they often lack adequate economic, social and technical

support. Rather than deploy deterrent legal measures, it is suggested that social measures, including the provision of 'family life education', occasional child care services and enhancement of community support, be developed to help parents carry out their child-rearing roles effectively.

In the study by Jacobson & Crockett (2000) on "Parental Monitoring and Adolescent Adjusment:An Ecological Perspective", Their study used an ecological framework to examine the associations between parental monitoring and a variety of indicators of adolescent adjustment. Specifically, investigators examined whether higher levels of parental monitoring were associated with higher adolescent grade point average, lower levels of adolescent depression, and lower levels of adolescent sexual activity and minor delinquency, and whether these relation were moderated by gender, grade level, or mother' work status. Participants were 424 7th to 12th graders from a single rural school district in central Pennsylvania. Bivariate correlation indicated that parental monitoring had strong associations with all indicators of adjustment for both boys and girls, with the exception of boys' depression. Gender and grade level simultaneously moderated the relation between parental monitoring and adolescent delinquency, with the effect of parental monitoring increasing across grade level for boys, and decreasing with grade level for girls. Furthermore, maternal employment moderated the relation between monitoring and adolescent delinquency and sexual behavior. For both boys and girls, monitoring was a significant predictor of problem behaviors among adolescents whose mothers worked full time. Thus, effective monitoring may compensate for a lack of direct supervision. However, gender further moderated these associations. Specifically, the relation between monitoring and adjustment was also significant among girls when their mothers were not working and among boys when mothers worked at least part time.

The study of Wendi K.Schweiger & Marion O' Brien (2005:512-522) on the topic, "*Special needs adoption: an ecological systems approach*", because of changes in legislation and policies regarding child welfare, increasing numbers of older children are being placed for adoption. Many of these children are defined as having "special needs" and include children who are at risk for physical, emotional, or

behavioral problems. They use Bronfenbrenner's ecological systems theory as a framework to review the literature regarding child and family adjustment to adoption, with particular emphasis on special needs adoptions. They include recommendations for improvements in pre- and post-adoption intervention services based on an ecological model. They focused their review on the interrelations among the four ecological systems that are purposed to affect children's development: (a) the microsystem, or the immediate setting or environments in which the child lives, primarily the family. An ecological approach encourages a focus on the implications of the goodness of fit between family paradigms, parental expectations and related feelings of legitimacy, and child characteristics, thus informing the development of pre- and post- adoption services that have the goal of maximizing the likelihood of a good fit. Further, an increased focus on the interlocking network of family relationships and the transactional nature of influence within families would enhance our understanding of the processes of adaptation and accommodation when special needs children are adopted.; (b) the mesosystem, or the linkages between two or more microsystems (such as adoptive children's biological and adoptive families). Ecological systems theory emphasizes the interconnectedness of experience across contexts. Children whose early lives were abusive or neglectful bring the psychological impact of those experiences with them to an adoptive family, and their relationships with their adoptive parents are affected by them. In addition, there are links between the children's current environments-home, school, and peers- that have not been thoroughly examined in the research literature or considered by practitioners who are developing support services for adopted children and their families.;(c) the exosystem, defined as setting not experienced directly by the child but that influence the microsystem (such as post-adoption services provided to parents). Families who choose to adopt children from foster care are exposed automatically to a system of social services that, from an ecological systems perspective, has direct and indirect effects on children. Whether parents' overall experience with social services is positive or negative is likely to have long-term effects on their beliefs and attitudes about adoption in general and their own adopted child in particular. ; and (d) the macrosystem, or the wider society and culture that encompasses all the other systems. In pre-adoption services have developing creative ways of involving other supportive

individuals (e.g., extended family, coworkers) in the process would also be likely to enhance successful adjustment. It is clear from the study of families under stress that informal social supports make an important contribution to health and wellbeing. In post-adoption services interventions and programs to provide support operate at the exosystem level relative to children, as they tend to be focused on the adoptive parents alone. Effectiveness of such programs could be increased by including the adoptive child and by extending services to multiple environments experienced by the child, thus moving the intervention to the mesosystem level, and by incorporating informal supports available to families, as noted above. Intervention at this mesosystemic level also suggests strengthening the links between the multiple environments experienced by the child.

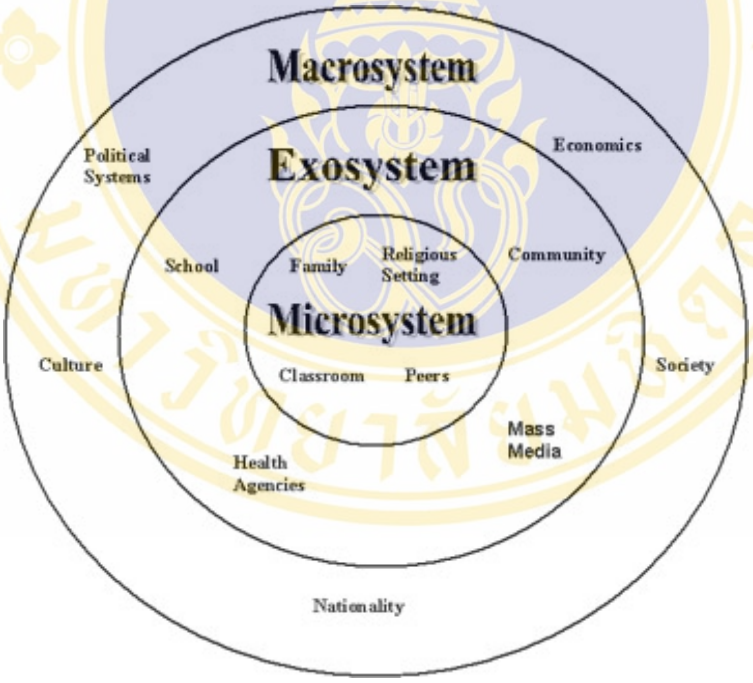


Figure 1 Ecological model by Bronfenbrenner (http://www.sesklearning.gov.sk.ca/branches/psych_portal.mtp.shtml)

Werner – Wilson (2005) proposed that family ecosystem means the family system has interaction with the environment, both human built environment relating to social and cultural environment and the natural physical- biological

environment (Figure 2). Families interact with their environment to form an ecosystem. Families carry out the following for the good itself as well as the good of society: biological sustenance, ecological maintenance, and psychosocial and nurturance functions. All peoples of the world are interdependent on the resources of the earth: there is a balance between cooperation and integration in the ecosystem and there is a balance between with demands of the individual for autonomy and freedom.

Concept of Werner - Wilson has limitation of the theory. They offered the question about; Are systems concepts compatible with family ecology theory? Are mechanistic or biological principles generalizable to human and family systems? Is it too broad and inclusive? New constructs may create confusion or redundancy. Are the concepts too abstract?

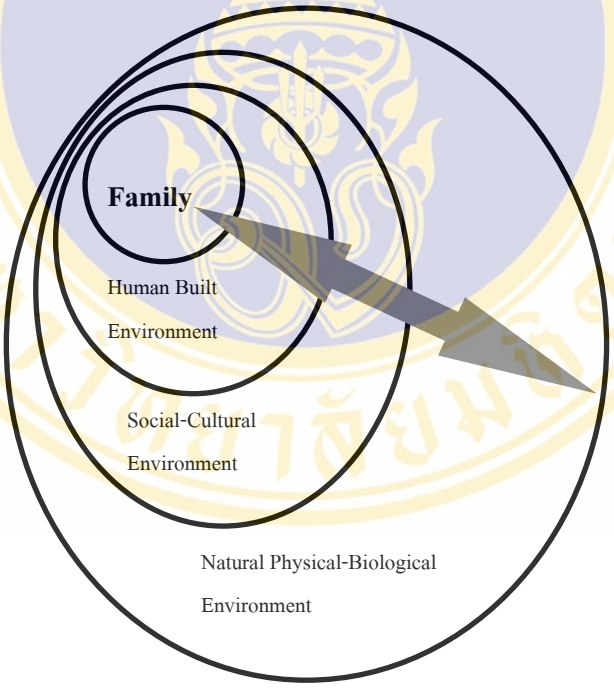


Figure 2 Family Ecosystem by Ronald J. Werner - Wilson

Human ecological concept, family concept and ecological framework make the behavioral patterns or actions of the family members that are in response to the environment in daily lives become the expression of relationships between humans (the family members) and the environment. Definition of ecological family model

derives from the study of relationships between the family and the environment, which are mutual actions that the family members must adjust to fit into the environment both internally and externally; each level affects the family members both directly and indirectly whereby Bronfenbrenner tested human behavior of each individual which occurs after the interaction between the environment and individual (Klein & White, 1996: 226).

2.3.4 Health Promotion

Health according to model of adaptation (Dubos, 1965 cited by Somjithanu Charearnkul et al, 2000: 4) is based on the belief that individual seriously and continuously adapt to the environment to maintain the environmental balance; therefore, good health means the elasticity in the adaptation effectiveness with the environment and having a relationship that yield the most benefit from the environment. This is consistent with Roy (1993), who pointed out that health means the person ability to adapt to the environment both in the aspect of freedom and intention.

Health promotion means the process that increases the ability to maintain and develop our health (Ottava Charter for Health Promotion, WHO, 1986). Health promotion is the result of educational and environment support that affect our reaction to the daily life situation. Such actions can be carried out by individual, family, community, environment and society as a whole (Green & Kreuter, 1991: 4). Health promotion is activities that elevate health and life including individual, family, community, environment and society acknowledging the highest capability in the aspect of health (Murray & Zenter, 1992 cited by Montira Lohapanwong). Health promotion comprises of different activities that affect the individual, family, community and society happiness level. Ottawa Charter has designated health promotion action as followed:

2.3.4.1 The boundary of building Healthy Public Policy by health promotion is broader than the conservator framework; therefore, health issue should be in the consideration of policy making at all level in order for the policy makers to acknowledge the affects from their decision and accept their own responsibility toward health. Heath promotion policy must designate numerous way of health promotion but

consistent with and support each other by using legislation, finance, tax and customs and organization reform, combining the activities that would lead to health, revenue and social policies that create more equality. Those activities will result in safer and healthier goods and services. Health promotion policy must include the obstacle to health promotion policy for other non-health organization and finding ways to eliminate such obstacles with the objective being the policy makers in the organization decision to accept the healthy choice easier.

2.3.4.2 Create supportive environments that facilitate health promotion: Due to society being complex and connective; therefore, the health goal cannot be separated form other goals. Human and environment relationship is important for finding health development in the aspects of sociology and ecology. The principles that are used to show the overall picture to the world, different countries, regions along with communities are necessary in the promotion of the preservation each other of and helping each other. The community and natural environment should enforce the concept stating that natural resource preservation is the duty of the world population. The principles that are used to show the overall picture to the world, different countries, regions along with communities are necessary in the promotion of the preservation each other of and helping each other. The community and natural environment should enforce the concept stating that natural resource preservation is the duty of the world population. The changes in lifestyle, working relaxation affect the health. The way society mange work may create healthy society. Health promotion help build conditions that make working safe, motivating, satisfying and enjoyable. The systematic evaluation of affect to health in the society environment that quickly changes, especially concerning technology, work performance, energy, production and city boundary growth, is an important measure and must be followed by activities that would be positive to the public health. The maintenance of the existing and future natural resources including natural resource preservation should be included in the health promotion strategy.

2.3.4.3 Strengthen community action: Health promotion operation depends on solid and effective community activities in all phrases; prioritization, decision, planning, strategy and the operation of the strategy for better health condition. The heart of the operation is strengthening community action that would

result in the ability to control it own work and the future of the community. The material and human resources must be gathered in order to elevate itself and be self-dependence including the development system must be flexible in community participation promotion and presentation of health issue. The community must access the information to learn health issue. There must also be continuous financial support.

2.3.4.4 Personal skill development: The health promotion assists in personnel and society development by providing health education and lifestyle skills increase. By doing so, the alternatives for the population must increase in order for the community to be able to increase its control over the health and society condition and able to choose the alternative that promote health. In enabling the population to be life time learner in order for the population to be prepared to enter into different stages of life including the readiness to face unavoidable chronic diseases and injuries. This process must start in the school, home, and workplace and within the community by requesting organizations relating to education, vocational, business and volunteer to participate in the activities including the arrangement of the activities within the organizations.

2.3.4.5 Health services reorientation: The health promotion for the arrangement of public health is the joint responsibility among individual, community, health vocational practitioners, health service providers and the government. The personnel must brainstorm to find conservator health system that is consistent with the health goal. The health organization role must move toward health promotion. More attention must be paid to health analysis when there is an adjustment of public health, which would lead to the change of attitude and public health service arrangement that will focus on the full demand of the individual.

Ottava Charter indicates that health promotion must be along side with the promotion of facilitating environment, which is consistent with another idea that started in the Ecological Public Health (Health System Research Institute, 1998:7), which is invented to respond the changed health issue. The environment problem is also getting violent. These problems also include ecological risks e.g. the destruction of ozone layer, global warming and water/air pollution that are more than the ability to control or correct. These situations greatly affect the health and hard to correct with

simple methods. Public health ecology emphasizes on the combination of health goal success and permanent development by focusing on economic and environmental factors that are the indicators of health.

Ecological approaches in health promotion view health as a product of the interdependence of the individual and subsystems of the ecosystem (such as family, community, culture, and physical and social environment). To promote health, this ecosystem must offer economic and social conditions conductive to health and healthful lifestyles. These environments must also provide information and life skills so individuals can make decisions to engage in behavior that maintains their health. Finally, healthful options among goods and service offered must be available. In the ecological model of health promotion, all these aspects are envisioned as determinants of health. They also provide essential support in helping individuals modify their behaviors and reduce their exposure to risk factors (Green & Kreuter, 1999: 22).

2.4 Formative Research

The formative research methodology is a relatively research method that can be used to create or improve existing design theory through testing its application in a specific case. This type of research aims to determine what methods work well in the theory, what methods don't work well and thus need to be improved, and how the design theory can be improved. Formative research is a kind of case study research, action research, developmental research, and grounded theory development. Reigeluth & Frick is underlying logic of formative research in *Formative Research: A Methodology for Creating and Improving Design Theories* in 1999.

Formative evaluation (sometimes called field testing or usability testing) is a methodology for improving instructional resources and curricula (Bloom, Hastings & Madaus, 1971;Cronbach, 1963; Scriven, 1967; Thiagarajan, Semmel & Semmel, 1974). It entails asking such questions as "What is working?", "What needs to be improved?", and "How can it be improved?" (Worthen & Sanders, 1987, p. 36). Using it as the basis for a developmental or "action" research methodology for improving instructional-design theories is a natural evolution from its use to improve particular

instructional systems. It is also useful to develop and test design theory on other aspects of education, including curriculum development, counseling, administration, finance, and governance.

The underlying logic of formative research as discussed by Reigeluth (1989) is that, if you create an accurate application of an instructional-design theory (or model), then any weaknesses that are found in the application may reflect weaknesses in the theory, and any improvements identified for the application may reflect ways to improve the theory, at least for some subset of the situations for which the theory was intended. There are notable similarities to the logic of experimental design, in which one creates an instance of each parameter of an independent variable, one collects data on the instances, and one generalizes back to the independent-variable concepts. Replication with diverse students, content, and settings is necessary in both cases. However, for formative research the guiding questions are, "What methods worked well?" "What did not work well?" and "What improvements can be made to the theory?"

In the formative research methodology, an instance (or application) of a theory is created or identified. The design instance is based as exclusively as possible on the guidelines from that theory. For example, for an instructional-design theory, a course might be developed based solely on that theory, using as little intuition as possible. The application (the course in this case) is then formatively evaluated using one-to-one, small-group, and/or field-trial formative evaluation techniques (Dick & Carey, 1990; Thiagarajan, Semmel & Semmel, 1974). The data are analyzed for ways to improve the course, and generalizations are hypothesized for improving the theory.

Formative research has been used to improve existing instructional-design theories and models, including the Elaboration Theory (English, 1992; Kim, 1994), a theory to facilitate understanding (Roma, 1990; Simmons, 1991), a theory to foster awareness of ethical issues (Clonts, 1993), a theory for designing instruction for teams (Armstrong, 1993), and a theory for the design of computer-based simulations (Shon, 1996). It has also been used to improve instructional systems development (ISD) models, such as Keller's (1987) process for the motivational design of instruction (Farmer, 1989). Furthermore, it has been used to improve educational systems design (ESD) models for school systems engaging in systemic change (Carr, 1993; Naugle,

1996). The methodology has proven valuable for identifying ways to improve these theories and models, and it could also be used to improve theories and models in virtually all fields of education.

2.4.1 Methodological Procedures in Formative Research

Formative research follows a case study approach as outlined by Yin (1984). Specifically, the design is typically a holistic single case—one application of the theory. The study isexploratory in nature because there is "no clear, single set of outcomes" (Yin, 1984, p. 25). Yin believes that a single case study is appropriate when "a how or why question [has been] asked about a contemporary set of events" (p. 20), which includes how to improve a design theory. This type of methodology lends itself well to researcher-teacher collaboration.

Specifics of the research methodology vary depending on the kind of formative research study. Over the past seven years, we have gradually refined several methodologies for formative research, through the conduct of a dozen studies (Armstrong, 1993: Carr, 1993; Clonts, 1993; English, 1992; Farmer, 1989; Khan, 1994; Kim, 1994; Naugle, 1996; Roma, 1990; Shon, 1996; Simmons, 1991; Wang, 1992).

Case studies can be classified as designed cases or naturalistic cases, depending on whether the situation under investigation is manipulated in any way by the researcher. Formative research is a *designed case* if the researcher instantiates the theory (or model) and then formatively evaluates the instantiation. Alternatively, it is a *naturalistic case* if the researcher (a) picks an instance (or case) that was not specifically designed according to the theory but serves the same goals and contexts as the theory, (b) analyzes the instance to see in what ways it is consistent with the theory, what guidelines it fails to implement, and what valuable elements it has that are not present in the theory, and (c) formatively evaluates that instance to identify how each consistent element might be improved, whether each absent element might represent an improvement in the instance, and whether removing the elements unique to the instance might be detrimental. Furthermore, for naturalistic cases, the

methodology varies depending on whether the observation is done during or after the practical application. This makes three major types of formative research studies:

• *designed cases,* in which the theory is intentionally instantiated (usually by the researcher for the research,

• *in vivo naturalistic cases,* in which the formative evaluation of the instantiation is done during its application, and

• *post facto naturalistic cases,* in which the formative evaluation of the instantiation isdone after its application.

And within each of these three types, the methodology also varies depending on whether the study is intended to develop a new design theory (one which does not yet exist) or to improve an existing theory. Table 1 shows these variations. For a designed case to improve an existing theory, the methodological concerns center within the following process:

1. Select a design theory.
2. Design an instance of the theory.
3. Collect and analyze formative data on the instance.
4. Revise the instance.
5. Repeat the data collection and revision cycle.
6. Offer tentative revisions for the theory.

2.4.1.1 Designed Case to Improve an Existing Theory

While there is often much variation from one such case study to another, the following is a fairly typical process for conducting this type of formative research study.

1) Select a design theory. You begin by selecting an existing design theory (or model) that you want to improve.

2) Design an instance of the theory. Then you select a situation that fits within the general class of situations to which that design theory (or model) applies, and you design a specific application of the design theory (called a "design instance") . This instance may be a product or a process, or most likely both. It is important that the design instance be as pure an instance of the design theory as possible, avoiding both of the two types of weaknesses (omission: not faithfully

including an element of the theory; and commission: including an element that is not called for by the theory). This is an issue of construct validity, and its counterpart in experimental design is ensuring that each of the treatments is a faithful representation of its corresponding independent-variable concept.

The design of the instance can be done either by the researcher (as participant) or by an expert in the theory (with the researcher as observer), preferably with the help of a subject-matter expert (usually the teacher for the course used in the instance). In either event, it is wise to get one or more additional experts in the theory to review the instance and ensure that it is a faithful instance of the theory. If you find yourself or the expert in the theory having to make decisions about which the theory offers no guidance, make special note of all such occurrences, as areas of guidance that should be added to the design theory later. It is also wise to get one, or preferably several, additional subject-matter experts to review the instance for content accuracy.

3) Collect and analyze formative data on the instance. Next, you begin data collection by conducting a formative evaluation of the design instance (see e.g., Dick & Carey, 1990). The intent is to identify and remove problems in the instance, particularly in the methods prescribed by the theory. In some situations, design and implementation of the instance occur simultaneously, in which case the data are collected during the design process (or alternatively design occurs during the data collection process). In other situations, design and development of an instance are completed before implementation begins, in which case data collection comes as a separate phase of activity. In still other situations, you can do a combination—some small scale testing of parts as you design the instance, then larger-scale testing of the whole when it is completed.

First, you should prepare the participants, so that they will be more open in providing you with the data you need. This can be done by explaining that you are testing a new method, that you want them to be highly critical of it, and that any problems encountered will be due to weaknesses in the method, not to deficiencies in themselves. Try to establish rapport with them, and in one-to-one formative evaluations, try to get them to think aloud during the process (in this case, the instructional process).

Three techniques are useful for collecting the formative data: observations, documents, and interviews. *Observations* allow you to verify the presence of elements of the design theory and to see surface reactions of the participants to the elements. *Documents* on both elements (methods of instruction, in this case) and outcomes can help you to make judgments about the value of elements of the theory. For example, test results can help you to gauge how much learning occurred and what types of learning occurred. Newspaper reports of effects on the community can provide new insights about the value of certain elements or triangulation for elements on which you already have some outcome data, assuming the effects reported in the newspaper reflect the criteria you have established for assessing prefer ability, as discussed earlier.

But usually the most useful data come from *interviews* with the participants. Both individual and group interviews, or interactions, allow you to probe the reactions and thinking of the participants (such as teachers and students). They help you to identify strengths and weaknesses in the design instance, but they also allow you to explore improvements for elements in the design instance, to explore the likely consequences of removing elements from, or adding new elements to, the instance, and to explore possible situationalities (ways that methods should vary for different situations, such as kinds of learning, learners, learning environments, and development constraints for research on instructional-design theories). Although such data, as conjecture from the participants, are always suspect, they can also be highly insightful and useful. At a minimum they will likely provide some hypotheses worthy of testing with subsequent participants and situations. Interviews can be done during or after the implementation of the instance, or both.

Interactions with the participants *during* the implementation of the design instance should be guided by a set of questions that progress from very open-ended ones to very targeted ones. These questions should be tailored to the design theory under investigation, and should strive to collect data about how to improve the specific guidelines in the theory, including adding new guidelines that may better attain the goals targeted by the theory. Therefore, for instructional design theory the questions should focus on identifying particular aspects of the implementation of the design instance that helped or hindered learning and finding

ways to improve weak elements. The questions should be used flexibly and responsively, as they are prompted by such cues as facial expressions (e.g., a quizzical look), and used at break points in the implementation of the instance. If participants experience difficulties with certain elements of the instance, it is usually wise to help them overcome those difficulties before they proceed, so that future data will not be tainted by earlier weaknesses in the instance.

A different set of open-ended questions should be used *after* the implementation of the design instance. They should ask the participants such things as what they did and did not like about the various elements of the instance, what helped them, what did not help them, whether they felt that the materials and activities were appropriate for their needs, what changes they would make if they could, and whether they felt they attained the objectives. The purpose of the debriefing questions is to give the participants an opportunity to reflect on and evaluate the implementation of the design instance as a whole, to point out any strengths and weaknesses not mentioned before, and to make any additional comments. They should be strongly encouraged to point out weaknesses. Reliability or consistency across participants should be assessed so the point of saturation can be determined.

One additional point is worth mentioning here. Participants sometimes forget details about the design instance, and they have to be reminded where a particular element came in the overall process. Once shown, they usually have a lot to say. We suggest, then, after the first open ended questions, to have the participants trace back through the process to specifically recall their impressions. It can be particularly helpful to show the participant a video tape of the process.

Usually, the most useful data come from one-to-one interviews with participants during the implementation of the design instance, because you avoid the memory-loss problem of interviews after the fact and you can overcome problems that might jeopardize data collection in the remainder of the implementation. But interviews during the implementation have less external validity because of their intrusiveness. As in formative evaluation, we recommend starting with the richer but less valid data collection technique (one-to-one interviews during the implementation of the design instance) and moving to progressively less rich but more representative techniques (small-group and field trials with interviews afterwards) to confirm the

richer findings. It is usually helpful to record the interviews. And, in the more authentic trials for which the interviews are conducted afterwards, it is often helpful to video record the implementation of the design instance and have the participant comment about it while viewing the tape. Also, "member checking" (Guba & Lincoln, 1981) should be done with each participant as soon as possible after the information is recorded. One technique for member checking is to show each participant a typed summary of the information s/he contributed and discuss its accuracy.

The data collection should always focus on how to improve the design theory. We have found it beneficial to focus on what should *not* be changed (strengths), as well as what should be changed (weaknesses). Wherever weaknesses are found, it is, of course, important to get the learners' (or users') suggestions for ways to overcome those weaknesses, or at very least their reactions to any ideas you have about how to overcome each weakness. Several iterations of data collection are strongly advised (equivalent to increasing the number of subjects in an experimental study), to assess dependability of results. In these iterations, it is wise to systematically vary the situation (types of people and conditions) as much as you can, within the limits of the class of situations for which the theory is intended. This enables you to identify situationalities (different methods for different contextual conditions) and enhances external validity (generalizability).

Data analysis should be conducted during the data collection process, if possible, to identify consistency of data across students. Of major concern is identifying the principal strengths and weaknesses in the instruction and what improvements could be made to the theory. Data analysis involves three activities: data reduction, data display, and conclusion drawing (Miles & Huberman, 1984). Data reduction is "selecting, focusing, simplifying, abstracting, and transforming the 'raw' data...." (Miles & Huberman, 1984, p. 21). The analytical procedure outlined by Miles and Huberman (1984) focuses on categorizing the data by the types of observations made during the implementation of the design instance or the types of answers to questions during debriefing. Summary information could be placed in a series of matrices (such as those developed by Roma, 1990) which specify relevant situational characteristics (e.g., the students, content, and context) and array categories of data (e.g., elements of the theory) across them. Each cell would then represent either a

positive/negative or yes/no response, depending on the nature of the data. Specific recommendations for improvement could be keyed to each weakness identified in the matrix and described in detail apart from the matrix. Many of the matrix categories cannot be determined prior to the study, as the majority of questions are open ended.

One potential problem with open-ended questions is that many of the cells you end up with in the matrices may not be filled, because some students might not offer any data on some categories. This would make it difficult to draw adequate conclusions for all categories across types of situations (e.g., students, content, and contexts). One way to eliminate this problem is to use a combination of both open-ended and directed questions during data collection. This mixture could contribute information about specific aspects of the design instance from all participants and would, therefore, increase the number of filled cells. But it would be impossible to predict all categories of information, so we do not recommend the use of *only* directed questions. Our suggestion is to start with open-ended questions, and then use directed questions for certain important issues you know of in advance of the study or that emerge very early during data collection.

4) Revise the instance. Next, you make revisions in the instance of the design theory, based on the data you collected. These revisions do not have to wait until you finish all the data collection and analysis. If you make the revisions as soon as you feel fairly confident in their value, then you can use them in your remaining data collection, perhaps even showing both versions of the design instance to the same student for comparative evaluation. You should also take note of the nature of the revisions, for they represent hypotheses as to ways in which the design theory itself might be improved.

5) Repeat the data collection and revision cycle. Several additional rounds of data collection, analysis, and revision are recommended, again systematically varying the situation (people and conditions) as much as you can from round to round, within the boundaries of the theory. This is a way of confirming the earlier findings, and it enhances external validity (generalizability) so essential for justifying changes in the design theory itself. During this process, you are likely to find that a method that works very well for some situations may not work as well as an

alternative method for other situations. Such "situationalities" are important discoveries in a research effort to improve a design theory and better meet the needs of practitioners.

6) Offer tentative revisions for the theory. Finally, you should use your findings to hypothesize an improved design theory. Naturally, your suggestions will not become "knowledge" until they have been more thoroughly replicated and validated. Additional formative research studies will provide the needed replication, but experimental studies are a form of research well suited to validation (or refutation!).

2.4.1.2 Designed Case to Develop a New Theory

This kind of formative research differs from the previous one primarily in that you do not start with an existing design theory. This means that you must skip Step 1 above entirely. Second, you must greatly modify Step 2 so as to design the best case (counterpart to an instance of a design theory), without a design theory for guidance. The purpose of this is to be able to use a concrete case from which to build grounded design theory, based largely on experience and intuition. Several of the theories in this book seem to have been developed using basics of this kind of approach (e.g., Corno & Randi, Chapter 14; Nelson, Chapter 12; Perkins & Unger, Chapter 5; Pogrow, Chapter 15; Schwartz, Lin, Brophy & Bransford, Chapter 10), though the use of this approach would naturally have been intuitive rather than explicit. Steps 3, 4, and 5 remain virtually unchanged, but Step 6 must now be a process of inductively developing a new design theory, rather than modifying an existing theory. The new Steps 2 and 6 are as follows.

Step 2: Create a case to help you generate the design theory. You begin by selecting a situation that fits within the general class of situations to which you want your new design theory (or model) to apply. Then you design the best case you can for that situation, using experience, intuition, and trial and error, often in combination with knowledge of related descriptive, scientific knowledge of education. This case may, of course, be a product and its implementation, or a process, or most likely both. The case must be created by the person who will be developing the design

theory, because intimate familiarity with the case is essential for developing good grounded theory. As you develop the case, you should develop a tentative design theory in parallel. For each element you decide to include in your case, you should generate guidelines for selection and use of that element and incorporate them into your theory, so that your case will become an instance of the theory.

Step 6: Fully develop your tentative theory. Finally, you should use your findings to revise and elaborate your tentative design theory. It is unlikely you will have been able to test your theory for the full range of situations for which the theory is intended, so there will likely be holes and other inadequacies in the theory. You should try to identify and describe all such inadequacies when you offer your theory to the public. And you should offer a research agenda that identifies the types of developmental studies you think would help most to further develop the theory.

2.4.2 Methodological Issues for Formative Research

Case studies have been criticized in the past for their lack of rigor. However, this concern can be addressed by attending to three classes of methodological issues: A) construct validity, B) sound data collection and analysis procedures, and C) attention to generalizability to the theory.

2.4.2.1 Construct validity

Construct validity is concerned with "establishing correct operational measures for the concepts being studied" (Yin, 1984, p. 37). The concepts of interest in formative research are the *methods* offered by the design theory, any *situations* that influence the use of those methods, and the *indicators* of strengths and weaknesses (criteria for outcomes). The operationalization of the methods and analysis of relevant situations should be done by an expert in the theory, and preferably reviewed by one or two other experts in the theory, to assure their construct validity. As was mentioned under Step 2 above, there are two ways in which construct validity can be weakened: omission (not faithfully including an element of the theory) and commission (including an element that is not called for by the theory). The indicators of strengths and weaknesses should include the effectiveness, efficiency, and appeal of the methods, as discussed earlier. The indicators of effectiveness should be developed by an expert in measurement for the particular goals of the design instance or case, and

reviewed by another. The indicators of efficiency should be developed by someone who is expert in measuring time and expense for both designing and using the methods, and those indicators should be reviewed by another expert. The indicators of appeal should be developed by an expert in motivational measurement and reviewed by another.

2.4.2.2 Sound Data Collection and Analysis Procedures

The soundness of the data collection and analysis procedures is influenced by two major factors: the thoroughness or completeness of the data, and the credibility or accuracy of the data. These two factors overlap to some degree, but it is helpful to think of them as two separate issues (cf., Rubin, 1994, on usability engineering).

Thoroughness of the data can be enhanced through a number of techniques, including advance preparation of participants, an emergent data-collection process, gradually decreasing obtrusively, iteration until saturation, and identification of strengths as well as weaknesses.

First, participants often require *advance preparation* because they may have difficulty critiquing the design instance or case. For example, students tend to blame their learning problems on themselves rather than on their instruction. And even if they see problems with the instruction, students are often hesitant to criticize it in the presence of one who may have some ego investment in it. Therefore, it is important—before the implementation of the design instance or case begins—to prepare the participants to be critical. Furthermore, establishing rapport with the participants will tend to make them more open to sharing all their reactions.

Second, because you have little idea as to what weaknesses and areas of improvement you may find in the theory, it is important that your data-collection process be *emergent*, that your quest for data be flexible and responsive to your findings, starting with open-ended probes (e.g., questions, observations, documents) and gradually becoming more targeted in response to promising leads.

Third, it is helpful to start with fairly obtrusive probes (that interrupt the implementation of the design instantiation) in your early rounds of data collection (e.g., with your first students in one-to-one interactions) and gradually

become *less obtrusive* to confirm the earlier findings under conditions that have greater external validity.

Fourth, it is generally wise to continue the rounds (or iterations) of obtrusive probes until you have reached the point of *saturation* (where new rounds of data collection merely confirm prior findings and yield no new findings) (cf. Merriam, 1988).

Finally, to be thorough, you should be sure to collect information about the *strengths* as well as the weaknesses of the design instance or case, and about what should not be changed as well as what should.

Credibility of the data can also be enhanced through a variety of techniques, including triangulation (Lincoln & Guba, 1985), chain of evidence, member checks (Guba & Lincoln, 1981), and clarification of the researcher's assumptions, biases, and theoretical orientation (Merriam, 1988).

First, *triangulation* entails using multiple sources of evidence (data) and cross-validating each source against the other sources. In a formative research study, the multiple sources of evidence are, first of all, multiple participants (e.g., students). Data should be collected in additional rounds (iterations) with different participants until considerable consistency of results (saturation) is obtained across participants. (This is a clear point of overlap with the thoroughness of the data.) And multiple sources of evidence should be collected for each participant (e.g., observations of a student during learning, interviews with the student, and the student's productions—tests, papers, project reports). We recommend that some objective measures be utilized for evaluating the design instance or case, to get some sense of the general acceptability of the outcomes (e.g., pre- and posttests for measuring the effectiveness of instruction, and similarly objective measures for efficiency and appeal).

Second, all data collection procedures should be clearly and precisely documented to establish a *chain of evidence*, and—as Yin suggests—the study should be performed as if someone is looking over the shoulder of the investigator.

Third, *member checks* usually entail taking data and interpretations back to the participants. Through further dialogue with participants errors or misconceptions by the researcher can be corrected, interpretations clarified, and emphases modified.

Finally, clarification of the *researcher's assumptions*, biases, and theoretical orientation should be done early in the research report, and every attempt should be made to make these views explicit.

2.4.2.3 Attention to Generalizability to the Theory

Finally, rigor in formative research is increased by enhancing ways that the results can be generalized to the theory. There are two major tools for doing this: recognizing situationality and replicating the study. *Situationality* can be explored in at least two ways:

1) whenever you find different resultsin different rounds (iterations), look for differences in the situation (e.g., for a study on instructional design, the nature of: the learner, what is being learned, the learning environment, and the development constraints), and

2) purposely vary elements of the situation in your rounds of data collection to see if the results differ.

These findings can allow you to hypothesize situationalities for the theory you are testing. When situationalities are incorporated into the theory, the theory becomes useful for a broader range of situations. At a very minimum, your research report should describe as completely as possible the situations under which the theory was applied in your study, so that others may draw conclusions about situationalities. *Replication* is necessary to confirm the findings of any formative research study. With sufficient replications, hypotheses about improvements to the design theory gain sufficient evidence to warrant changes in the theory. Naturally, the replications should systematically vary all situational elements that may cause different methods to be preferable.

CHAPTER III
RESEARCH METHODOLOGY

The purpose of this research is to develop ecological family model in health promotion. Details of the study are as follows.

3.1 Study Area

Study area was Bangsaipa sub-district, Banglen district, Nakornpathom province, which was the province that did not pass the assessment of health province according to Healthy Thailand Policy of the government (2005) whereby the public health indicators were exercise, foods, emotions, disease, environmental health and all vices. The research specifically selected the district and sub-district level that did not pass the Healthy District and Sub-district standard. When considered each district separately, none of the districts were found to pass the assessment, and Banglen district was, therefore, selected. When considered each sub-district in Banglen district, it was found that Bangsaipa sub-district did not pass the Healthy Sub-district standard and was, therefore, selected as the study area in this research.

3.2 Unit of analysis

Unit of analysis was a family.

3.3 Process of the study

The methods were as follows.

3.3.1 Theoretical study

Study theories, principles and concepts related to ecological family model in health promotion from documents, textbooks and related research, and then identify a conceptual framework of the research by means of documentary analysis, which were obtained from the study of related documents, textbooks, Internet sources and related research, including human ecology concept, family concept, and health promotion concept.

3.3.2 Survey study

Conduct a field study by means of contextual study and the study of problem conditions, and needs of family in the environment. Study context was at the sub-district level, which included families resided in Bangsaipa sub-district. The study was a descriptive research and a survey study in order to know general information of the families in the sub-district context, roles of family members, and current problem conditions, and needs of family in the environment in order to apply information into the development of ecological family model in the next stage. This stage had the following details.

3.3.2.1 Sampling group consisted of the families resided in Bangsaipa sub-district, Banglen district, which were obtained by means of stratified sampling with 10 villages; 20 families from each village. The total sample was 200 families, which was appropriate for data analysis using Chi-square table. From variables and sub-groups of each variable, when multiplying with the expected number of samples in each range which must not be less than 5, it was found that the number of samples should not be less than 60. Additionally, in order to prevent inconsistency of distribution, the researcher collected the total number of 200 samples.

3.3.2.2 Research instruments: Tools used for the contextual study was for surveying current conditions, problems and the needs of the families in relation to health and environment, which were constructed from the concept of family ecology.

Tools used were questionnaire, checklist and five-rating scale. Process of construction and validity assessment of the research tools were as follows:

1) Study theories, principles and concepts related to family ecology from related documents, textbooks and research.

2) Identify conceptual framework of the research by means of documentary analysis obtained from the review of documents, textbooks, Internet sources and related research, which consisted of the concept of human ecology, family and health promotion.

3) Identify content and structure of the questionnaire.

4) Construct the questionnaire with five-rating scale: the highest; high; moderate; low; the lowest, which consisted of 36 questions.

5) Submit the constructed questionnaire to thesis advisors for assessment of content validity and appropriateness of language usage.

6) Improve and adjust the questionnaire based on the advice of thesis advisors.

7) Try out the questionnaire after adjusting the contents and language with 30 families in Bangsaipa sub-district, which were not targeted group, in order to examine appropriateness of language and questions used to communicate for further improvement.

8) Assess reliability value of the data obtained from the tryout by means of Cronbach's Coefficient of Alpha-α (Boontham Kijpreedaborisut, 1992: 175). The formula is as follows:

$$r_{tt} = \frac{k}{k-1}\ \frac{[\,1-\Sigma S^2_i\,]}{S^2_x}$$

When r_{tt} = reliability value of the questionnaire

k = number of questions

S^2_i = Total variance of each question

S^2_x = Variance of the total score

From an analysis of the questionnaire on current conditions, problems and the needs of the families in relations to health, it was found that the reliability

value was equivalent to 0.94, which indicated sufficient reliability for application of the research instrument in the actual data collection process.

3.3.2.3 Data Collection: The researcher collected the data by means of contact for cooperation from pubic health officers within that area in order to ask the sampling group according to the questionnaire.

3.3.2.4 Data analysis from the collected questionnaires: The researcher analyzed the collected data using SPSS for Windows 11.5 in each part of general information of the participants, which were checklists. The researcher then analyzed frequency and percentage. In term of the data on current conditions, problems and the needs of the families, which were five-rating scales, the researcher analyzed by means of percentage, mean and standard deviation, and then transformed the mean value into the level of current conditions, problems and the needs of the families by comparing with identified criteria as follows:

Mean of each question	1.00 – 3.00	means	a low level
Mean of each question	3.01 – 5.00	means	a high level

Data of roles of the family members was then used to assess the relationships with current conditions, problems and needs of family in the environment by means of Chi-square.

3.3.3 Present the outline

Present the outline of ecological family model in health promotion by presenting to the thesis committee, and examine within the area.

3.3.4 Examine within the area

Then examine within the area by conducting a contextual study at the village level from the families volunteered to participate in the research project. Details were as follows.

3.3.4.1 Sampling group: The researcher used the sampling group to develop ecological family model for health promotion, which were 20 families in “Moo 6”, Bangsaipa sub-district, Banglen district in which the researcher applied the method of purposive sampling. These families were willing to participate in this research project.

3.3.4.2 Research instruments: This stage is an action stage. The tools used were a field record, family profile, and voice recorder.

3.3.4.3 Data collection was done by:

1) The researcher organized a meeting stage for exchange to evaluate problem and needs of family in the environment by means of focus group. Activity in the meeting stage for exchange was conducted by four doctoral degree students, including the researcher as a data collector, who well acknowledged and understood research objectives and methods.

2) A family visit was performed by using a field record, an in-depth interview and participant observation. The researcher self-collected the data.

3.3.4.4 Data analysis was done by establishing conclusion, data categorization, typological analysis, and data comparison.

Finally, researcher improved and presented ecological family model in health promotion.

CHAPTER IV
RESEARCH RESULTS

The result of this research would be presented in five major topics:

4.1 Ecological family

4.2 Contextual study in Bangsaipa sub-district .

4.2.1 General condition of Bangsaipa sub-district

4.2.1.1 Location

4.2.1.2 Weather condition

4.2.1.3 Population characteristics

4.2.1.4 Physical characteristics

4.2.2 Sampling group data

4.2.2.1 General information

4.2.2.2 Roles of the family members

4.2.2.3 Current conditions, Problems and needs of family

4.2.2.4 Relationships

1) Relationships of general information with current conditions, problems and needs of family in the environment, using Chi-square test

2) Relationships of roles of the family members with current problems and needs of family in the environment, using Chi-square test

4.2.2.5 Environmental problem

4.2.3 Summary of family characteristics in Bangsaipa sub-district

4.2.3.1 External factors

4.2.3.2 Internal factors

4.3 Outline of ecological family model in health promotion.

4.4 Model examination

4.4.1 Examination with experts

4.4.2 Field examination

4.4.2.1 General characteristics of Thasrai village

1) Location and border
2) Population characteristics
3) Weather condition
4) Physical characteristics
5) Background of the village
6) Society and way of life
7) Environmental situation
8) Health situation
9) Family beliefs

4.4.2.2 Characteristics of the studied families

4.4.2.3 Development process

1) Adaptation process
2) Outcomes

4.5 Ecological family model in health promotion

4.1 Ecological family

Ecological family was the study of relationship between the families and the environment that the families resided in. The family was an organization that was mutually established as one of the organizations of humankind. It was originated from the relationship of individuals and was developed in accordance with the time dimension. The family was a small system that was rooted within a larger environmental system, both human built environment and physical-biological environment. Therefore, the family was required to adapt itself in order to maintain its balance with the environment that it was in.

This research studied the environment that the families resided in, which was Bangsaipa sub-district, Banglen district, Nakornpathom province by demonstrating location, weather condition, population characteristics, and physical characteristics as well as presenting general family information, roles of the family members, current

conditions, problems and needs of family and environment problems encountered by the family in order to use as an approach to present ecological family model in health promotion in the future.

4.2 Contextual study

4.2.1 General Conditions of Bangsaipa District

4.2.1.1 Location

Bangsaipa sub-district is one of the 15 districts in Banglen district, Nakornpathom province, located in the central region of Thailand. It is the province in the suburban area that is connected to Bangkok, the capital city of Thailand, with the area of 19,473 rai, equivalent to 41.021 square kilometers (as illustrated in Figure 1, 2 and 3). The location of the territory is as follows.

The northern territory is closed to Saingam sub-district, Banglen district, Nakornpathom province.

The southern territory is closed to Banglen sub-district, Banglen District, Nakornpathom province.

The eastern territory is closed to Pasri sub-district, Banglen District, Nakornpathom province.

The western territory is closed to Paihoochang sub-district, Banglen District, Nakornpathom province.

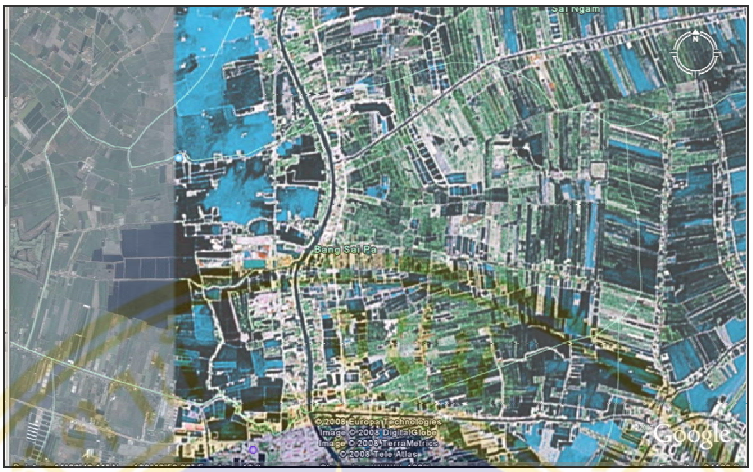


Figure 3 Bangsaipa sub-district from google earth (2008 Europa Technologies)

Figure 4 Bangsaipa sub-district from Nakornpathom Provincial Town Planning Office, Nakornpathom province

4.2.1.2 Weather Condition

As Bangsaipa sub-district is located in Nakornpathom province, the climate of Bangsaipa sub-district is tropical climate with 3 seasons: rainy season between May and October; winter season between November and February; and summer season between February and April.

4.2.1.3 Population Characteristics

The administration is divided into 10 villages, consisting of 826 households with the total population of 4,090, contributed to 2,030 males and 2,060 females. The majority of the populations are aged 18-49 (Office of Local Population Registration, 2004) and those who are farmers accounts for 530 households; those who are government officials or working for state enterprises accounts for 180 households; private employees accounts for 40 households; business owners accounts for 120 households; general employees accounts for 350 households. Average annual income below 20,000 baht accounts for 815 households and above 20,000 baht accounts for 448 households.

4.2.1.4 Physical Characteristics

On the area that is low land on both sides of Thachine River, the majority of the families situate their houses by the river or the road. Soil characteristic is clay with natural abundance that is appropriate for agriculture. The administration is divided into 10 villages. The main productivities are rice, Roselle, morning glory, tiger herbal, lotus stem, mango, jackfruit and orchid. There are two small groceries, one petrol station, one icehouse, one Roselle occupational group, one savings group, and one mobile rice-milling group. There are three industries within the area, including Thai Foods International Co., Ltd., producing food ingredients; Thai Alcohol Public Co., Ltd., producing alcohol; and S.G.C. Furniture, producing all types of furniture. There is one local administration office (Bangsaipa Sub-District Administration Organization), one primary school, one secondary school, one Bangsaipa Health Center, one Bangpainart Temple, and one community police office. There is fundamental service in transportation, which is macadamized road with the length of 4 kilometers, reinforced concrete road with the length of 2 kilometers, non-asphalt road with the length of 25 kilometers. In term of water source, there are 15 villages' water supplies, 10 wells, and 10 natural water sources (canals). There are 2 projects of Electrical Water Pump Project, consisting of Baan Thachang Electrical Water Pump Project and Baan Bangsaipa Electrical Water Pump Project. There 2 watergates, which are Pissamai Canal Watergate and Prachasrai Canal Watergate. Every household has electricity usage and there are 10 village information centers.

4.2.2 Sampling Group Data

The data collection by means of survey of families resided in Bangsaipa sub-district, Banglen district, which were obtained through stratified sampling of 10 villages; 20 families from each village, which was equivalent to 200 families in totals. Research findings found that general information, roles of family members, and current conditions, problems and needs of families towards the environmental problems had an effect on health, knowledge and attitudes toward environment and environmental management that was supportive to health. Details were as follows.

4.2.2.1 General information

Results on general information showed that the majority obtain maternal status with 1-5 members within the family. Most of them worked as general employees, followed by farmers, and obtained primary education and monthly family income of 5,001 – 10,000 baht. Residential characteristic of the family was single house while residential ownership characteristic of the family was in the form of wholly owned, as illustrated in Table 1.

Table 1: Characteristics of the Sampling Group categorized by General Information

General Information	Percentage (N= 200)
Family Status	
Mother	44
Fathert	34.5
Daughter	16
Son	5.5
Number of Family Members	
1-5 persons	81.5
6-10 persons	18.5

Table 1: Characteristics of the Sampling Group categorized by General Information (Continued)

General Information	Percentage (N= 200)
Occupation	
Government official and State enterprise employee	8.0
Merchant	8.5
General employee	29.0
Housewife	8.5
Farmer	23.0
Animal Husbandry and Others	23.0
Education	
Primary level	67.5
Secondary level	19
Diploma level	6
Bachelor degree level	6.5
Family Income per Month	
Less than 5,000 baht	19
5,001-10,000 baht	57
10,001-15,000 baht	13
More than 15,000 baht	11
Residential Characteristic of the Family	
Single house	95.5
Town house or Twin house	4.5
Residential Ownership Characteristic of the Family	
Owner	85.5
Rent and dwelling with relatives	14.5

4.2.2.2 Roles of the Family Members

Roles of the family members in various aspects indicated that in term of income earning the major role players were father, mother and children, as shown in Table 2, while in food preparation the major role player was mother (Table 3).

In term of decision-making toward family problems, the major role player was father, as demonstrated in Table 4.

In external social contact, the major role players were father, mother and children, as illustrated in Table 5.

Table 2: Income Earning categorized by the Role Player

Role Player of Income Earning	Percentage(n=200)
Father	14.5
Father and mother	11.0
Father ,mother and children	62.5
Father, mother, children, uncles and aunts	12.0

Table 3: Food Preparation categorized by the Role Player

Role Player of Food Preparation	Percentage(n=200)
Mother	44.5
Daughter	22.5
Mother and daughter	23.5
Mother, daughter, aunt and grandmother	9.5

Table 4: Decision-Making on Family Problems categorized by the Role Player

Role Player Of Decision-Making on Family Problems	Percentage(n=200)
Father	78.0
Mother	5.5
Father , mother ,uncle and grandfather	16.5

Table 5: External Social Contact categorized by the Role Player

Role Player of External Social Contact	Percentage(n=200)
Father	25.5
Father and mother	2.0
Father ,mother and children	30.0
Father, mother, children, uncles and aunts	24.5

4.2.2.3 Current conditions, Problems and needs of family

Current conditions, problems and needs of families in the environment were divided into 3 aspects, including environmental problems affecting to health, attitudes toward the environment and environmental management that was supportive to health. Research findings indicated that families perceived environmental problems affecting to overall health in a high level and problem of air pollution affecting to health at the highest level while solid waste problem and garbage problem affected health in a low level (Table 6). Families had overall knowledge and attitudes towards the environment in a high level. “If we cooperatively look after the environment, the Thai society will become happier” accounted for the most, “the environment nowadays is deteriorated”, “our house should be in good environment”, “family will have good quality of life if living in better environment” and “There are environmental problems around residential area of the family” accounted for the lowest (Table 7). Families had overall environmental management that was supportive to health in a high level in which “family has defecation in the toilet in order to protect from contamination of diseases attached to stools” accounted for the highest, followed by “family has clean water for drinking and usage”, “Members in your family do not keep electricity on”, while “family grows medicinal plants for application when encounter illness” accounted for the low level and “Members in your family take part in expressing opinion about environmental problems within community” and “Members in your family take part in decision-making on identifying which environmental problems are problems of community” were in a low level (Table 8).

Table 6: Mean and standard deviation of environmental problems affecting to health

	Statement	$\bar{x}$	S.D.
1.	Deterioration of natural resources has an impact on your health and on family members' health	3.42	1.11
2.	Waste water problem has an impact on your health and on family members' health	3.27	1.07
3.	Air pollution problem has an impact on your health and on family members' health	3.78	0.99
4.	Noise pollution problem has an impact on your health and on family members' health	3.00	1.12
5.	Solid waste problem has an impact on your health and on family members' health	2.76	1.15
6.	Garbage problem has an impact on your health and on family members' health	2.79	1.15
	total	3.17	0.84

Table 7: Mean and standard deviation of attitudes toward the environment

	Statement	$\bar{x}$	S.D.
1.	Environmental condition within and around the house is important for sustenance	3.86	0.88
2.	Family members have conversation about natural resources and environment	2.96	1.00
3.	Family members give importance to natural resource and environmental conservation	3.44	0.97
4.	Family members think that our house should be in good environment	4.33	0.74
5.	Family members are satisfied with the environment that the family is residing in	3.82	0.80
6.	There are environmental problems around residential area of the family	2.93	1.04
7.	Your family lives by considering income more than environment	3.23	0.96
8.	You think that your family will have good quality of life if living in better environment	4.18	0.82
9.	You think if we cooperatively look after the environment, the Thai society will become happier	4.46	0.65
10.	You think that forest areas of Thailand decline comparing to the past	4.27	0.95
11.	You think that the environment nowadays is deteriorated	4.20	0.89
12.	If you have an opportunity, you would like to participate in every environmental conservation project	3.97	0.94
13.	Your family gives importance to the environment	3.93	0.83
	total	3.78	0.45

Table 8: Mean and standard deviation of environmental management that was supportive to health

	Statement	$\bar{x}$	S.D.
1.	Family members arrange better surroundings within and around the house	3.89	0.87
2.	Family members search for foods that promote health, for examples, using hydroponics and medicinal plants in cooking for the family	3.47	0.97
3.	Your family has clean water for drinking and usage	4.27	0.77
4.	Your family has waste segregation prior to dumping or elimination	3.05	1.02
5.	Your family has defecation in the toilet in order to protect from contamination of diseases attached to stools	4.50	0.60
6.	Family members use water economically	3.83	0.88
7.	Your family recycles and reuses materials	3.00	1.16
8.	Your family uses correct method of hazardous waste management	3.47	1.05
9.	Your family grows medicinal plants for application when encounter illness	2.64	1.15
10.	Your family has chemical free environment	3.16	0.98
11.	Your family has prevention from accidents	3.66	0.93
12.	Your family participates in environmental conservation activities	3.14	0.97
13.	Members in your family do not keep electricity on	4.15	0.77
14.	When there are garbage and refuse, you will separate garbage from refuse prior to dumping	3.00	1.12
15.	Members in your family take part in expressing opinion about environmental problems within community	2.87	1.15
16.	Members in your family take part in decision-making on identifying which environmental problems are problems of community	2.79	1.12
17.	Members in your family persuade members of the other families to participate in environmental activities	3.00	0.97
	total	3.40	0.50

4.2.2.4 Relationships of general information and roles of the family members with current conditions, problems and needs of family in the environment, using Chi-square test

1) Relationships of general information with current conditions, problems and needs of family in the environment, using Chi-square test

The researcher applied general information and roles of the family members to analyze the relationships with current conditions, problems and needs of family in the environment in each pair by means of Chi-square test. Results

showed that status had the relationship with current conditions, problems and needs of family in the environment in term of environmental problems affecting to health at statistically significance level of 0.01.

General information, consisted of number of family members, occupation, education level, family income per month, residential characteristics of the family, and residential ownership characteristic of the family, had no relationship with current conditions, problems and needs of family in the environment in terms of environmental problems affecting to health. On the other hand, status and other general information had no relationship with current conditions, problems and needs of family in term of attitudes toward the environment and environmental management that was supportive to health.

Table 9: Relationships of general information with current conditions, problems and needs of family in the environment in terms of environmental problems affecting to health

General information	Environmental problems affecting to health	
	High level	**Low level**
Family status		
Father	43.5	56.5
Mother	54.5	45.5
Children	74.4	25.6
χ^2= 10.26, p-value=.006		
Number of Family Members		
1-5 persons	55.8	44.2
6-10 persons	51.4	48.6
χ^2 = .244 , p-value=.621		
Occupation		
Government official and state enterprise employee	68.8	31.3
Merchant	41.2	58.8
General employee	63.8	36.2
Housewife	70.6	29.4
Farmer	45.7	54.3
Animal Husbandry and others	47.8	52.2
χ^2=8.596 , p-value=.126		

Table 9: Relationships of general information with current conditions, problems and needs of family in the environment in terms of environmental problems affecting to health (continued)

General information	Environmental problems affecting to health	
	High level	Low level
Education		
Primary level	51.1	48.9
Upper primary level	63.1	36.9
χ^2=2.538 , p-value=.111		
Family income per month		
Less than 5,000 baht	39.5	60.5
5,001-10,000 baht	59.6	40.4
10,001-15,000 baht	53.8	46.2
More than 15,000 baht	59.1	40.9
χ^2= 4.86 , p-value=.182		
Residential Characteristic of the Family		
Single house	55.0	45.0
Town house or Twin house	55.6	44.4
χ^2=0.001 , p-value=.973		
Residential Ownership Characteristic of the Family		
Owner	56.7	43.3
Rent	44.8	55.2
χ^2=1.418 , p-value=.234		

Table 10: Relationships of general information with current conditions, problems and needs of family in the environment in terms of attitudes toward the environment

General information	Attitudes toward the environment	
	High level	Low level
Family status		
Father	91.3	8.7
Mother	93.2	6.8
Children	97.7	2.3
χ^2= 1.795, p-value=.408		
Number of Family Members		
1-5 persons	93.9	6.1
6-10 persons	91.9	8.1
χ^2 = .193 , p-value=.660		

Table 10: Relationships of general information with current conditions, problems and needs of family in the environment in terms of attitudes toward the environment. (Continued)

General information	Attitudes toward the environment	
	High level	Low level
Occupation		
Government official and state enterprise employee	87.5	12.5
Merchant	82.4	17.6
General employee	94.8	5.2
Housewife	100	0
Farmer	97.8	2.2
Animal Husbandry and others	91.3	8.7
χ^2=7.555 , p-value=.183		
Education		
Primary level	93.3	6.7
Upper primary level	93.8	6.2
χ^2= .019 , p-value=.89		
Family income per month		
Less than 5,000 baht	94.7	5.3
5,001-10,000 baht	93.9	6.1
10,001-15,000 baht	88.5	11.5
More than 15,000 baht	95.5	4.5
χ^2=1.344 , p-value=.719		
Residential Characteristic of the Family		
Single house	93.7	6.3
Town house or Twin house	88.9	11.1
χ^2= .330 , p-value=.566		
Residential Ownership Characteristic of the Family		
Owner	94.2	5.8
Rent	89.7	10.3
χ^2= .825 , p-value=.364		

Table 11: Relationships of general information with current conditions, problems and needs of family in the environment in terms of environmental management that was supportive to health

General information	Environmental management that was supportive to health	
	High level	Low level
Family status		
Father	76.8	23.2
Mother	76.1	23.9
Children	79.1	20.9
χ^2= .142 , p-value=.931		
Number of Family Members		
1-5 persons	79.8	20.2
6-10 persons	64.9	35.1
χ^2=3.775 , p-value=.052		
Occupation		
Government official and state enterprise employee	62.5	37.5
Merchant	82.4	17.6
General employee	79.3	20.7
Housewife	94.1	5.9
Farmer	71.7	28.3
Animal Husbandry and others	91.3	76.1
χ^2=5.903 , p-value=.316		
Education		
Primary level	78.5	21.5
Upper primary level	73.8	26.2
χ^2= .541 , p-value=.462		
Family income per month		
Less than 5,000 baht	78.9	21.1
5,001-10,000 baht	76.3	23.7
10,001-15,000 baht	69.2	30.8
More than 15,000 baht	86.4	13.6
χ^2=2.807 , p-value=.555		
Residential Characteristic of the Family		
Single house	77.5	22.5
Town house or Twin house	66.7	33.3
χ^2= .568 , p-value=.451		
Residential Ownership Characteristic of the Family		
Owner	78.4	21.6
Rent	69.0	31.0
χ^2=1.236 , p-value=.266		

2) Relationships of roles of the family members with current problems and needs of family in the environment, using Chi-square test

The researcher applied roles of the family members to analyze the relationships with current problems, conditions, and needs of family in the environment in each pair by means of Chi-square test. Research findings indicated that food preparation role had the relationship with current problems, conditions, and needs of family in the environment in terms of knowledge and attitudes towards the environment and environmental management that was supportive to health at statistically significance level of 0.01. Role of income earning and external social contact had the relationship with current problems, conditions, and needs of family in the environment in term of environmental management that was supportive to health at statistically significance level of 0.05, as illustrated in Tables below.

Table 12: Relationships of roles of the family members with current problems and needs of family in the environment in term of environmental problems affecting to health

Roles of the Family Members	Environmental problems affecting to health	
	High level	Low level
Role Player of Income Earning		
Father	72.4	27.6
Father and mother	36.4	63.6
Father, mother and children	52.8	47.2
Father, mother, children uncle and aunt	62.5	37.5
χ^2=7.430 , p-value=.059		
Role Player of Food Preparation		
Mother	61.8	38.2
Daughter	48.9	51.1
Mother and daughter	44.7	55.3
Mother, daughter and grandmother	63.2	36.8
χ^2=4.874 , p-value=.181		

Table 12: Relationships of roles of the family members with current problems and needs of family in the environment in term of environmental problems affecting to health (Continued)

Roles of the Family Members	Environmental problems affecting to health	
	High level	**Low level**
Role Player of Decision-making on Family Problem		
Father	55.8	44.2
Mother	45.5	54.5
Father, mother, uncle and grandfather	54.5	45.5
χ^2= .445 , p-value=.801		
Role Player of External Social Contact		
Father	60.8	39.2
Father and mother	57.5	42.5
Father, mother and children	45.0	55.0
Father, mother, children uncle and aunt	59.2	40.8
χ^2=3.561 , p-value=.313		

Table 13: Relationships of roles of the family members with current problems and needs of family in the environment in terms of attitudes toward the environment

Roles of the Family Members	Attitudes toward the environment	
	High level	**Low level**
Role Player of Income Earning		
Father	100.0	0
Father and mother	36.4	95.5
Father, mother and children	52.8	91.2
Father, mother, children uncle and aunt	62.5	37.5
χ^2=3.457 , p-value=.318		
Role Player of Food Preparation		
Mother	96.6	3.4
Daughter	100.0	0
Mother and daughter	44.7	80.9
Mother, daughter and grandmother	63.2	94.7
χ^2=16.983,p-value=.001		

Table 13: Relationships of roles of the family members with current problems and needs of family in the environment in terms of attitudes toward the environment (Continued)

Roles of the Family Members	Attitudes toward the environment	
	High level	Low level
Role Player of Decision-making on Family Problem		
Father	92.9	7.1
Mother	90.9	9.1
Father, mother, uncle and grandfather	54.5	97.0
χ^2= .853 , p-value=.653		
Role Player of External Social Contact		
Father	98.0	2.0
Father and mother	57.5	92.5
Father, mother and children	45.0	88.3
Father, mother, children uncle and aunt	59.2	40.8
χ^2=4.902 , p-value=.171		

Table 14: Relationships of roles of the family members with current problems and needs of family in the environment in terms of environmental management that was supportive to health

Roles of the Family Members	Environmental management that was supportive to health	
	High level	Low level
Role Player of Income Earning		
Father	100.0	0
Father and mother	77.3	22.7
Father, mother and children	73.6	26.4
Father, mother, children uncle and aunt	66.7	33.3
χ^2=10.926,p-value=.012		
Role Player of Food Preparation		
Mother	84.3	15.7
Daughter	68.9	31.1
Mother and daughter	63.8	36.2
Mother, daughter and grandmother	94.7	5.3
χ^2=12.306,p-value=.006		

Table 14: Relationships of roles of the family members with current problems and needs of family in the environment in terms of environmental management that was supportive to health (Continued)

Roles of the Family Members	Environmental management that was supportive to health	
	High level	**Low level**
Role Player of Decision-making on Family Problem		
Father	78.2	21.8
Mother	63.6	36.4
Father, mother, uncle and grandfather	75.8	24.2
χ^2=1.266 , p-value=.531		
Role Player of External Social Contact		
Father	92.2	7.8
Father and mother	70.0	30.0
Father, mother and children	71.7	28.3
Father, mother, children uncle and aunt	73.5	26.5
χ^2=9.031 , p-value=.029		

4.2.2.5 Environmental problems

The sampling group perceived environmental problems that should be improved as follows:

1) Solid waste problem: There was no solid waste storage system within the area and villagers had to handle by themselves.

2) Air pollution problem: Bad smell from alcohol manufacturing factory, rice injection, burning of rice straw of farmers, and waste burning of neighbors.

3) Waste water problem from industrial factories and from rice field, causing wastewater in the river.

4) Noise pollution problem from sand trucks and motorcycles.

4.2.3 Summary of Family Characteristics in Bangsaipa Sub-District

4.2.3.1 External Factors

1) Environmental Conditions

The families are located in Bngsaipa sub-district, Banglen district, Nakornpathom province. The weather condition is tropical climate, consisting of rainy season, winter and summer. The area is low land on both sides of Thachine River. Most families situate their houses by Thachine River and by the roads. Soil condition is clay, which is appropriate for agriculture. The total number of population is 4,090, consisting of 826 households. The administration is divided into 10 villages. The majority of the population is farmers. There are fundamental services in various aspects, including educational service, public health service, safety, convenient transportation both by water and by land, electrical water pump project, Watergates, and water source from village's water supply, wells and natural water sources (canals). Every household has electricity usage and there are also village information center. The temple is the center of religion.

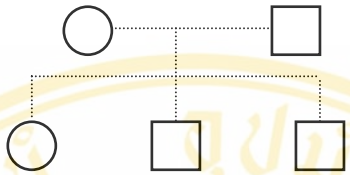
2) Environmental Problems

Environmental problems that should be improved were solid waste problem and air pollution problem as Bangsaipa Sub-district Administrative Organization had not had solid waste management system because there was no operating budget, making villagers living in responsible area of Bangsaipa Sub-district Administrative Organization to deal with solid waste by themselves. Air pollution problem was bad smell from alcohol manufacturing factory, which had been the problem within the area for a long time. In the past, the smell was severely bad and there was also black smog. Villagers used to make complaints and officers came to examine the problem. Nowadays, it is much better than the past, but there is still bad smell.

4.2.3.2 Internal Factors

1) Family Structure

In one family, there are approximately 1-5 members, consisting of father, mother and children as displayed in family genograms.



2) Role

Family consists of members of the family in which each person has different roles in order to sustain family status. Parent and children are the major role players in earning income, which is obtained from being employees and farmers. Mother also plays the role of food preparation. Father is assigned by the family to play the role of decision-maker toward family problems and acts as a person who makes social contacts.

4.3 Outline of ecological family model in health promotion

The study of relationship between the families and the environment that the families resided in demonstrated that the families settled their households on both sides of Thachine River and worked in agricultural field. The families were a nuclear family consisting of father, mother, son and daughter, with number of family members at an average of 1-5 persons. Father, mother and children had the role of income generation and external social contacts. Mother had the food preparation role and father was a person who made a decision on family problems. The families perceived environmental problems to have an effect on health. The families had good attitudes toward the environment as well as good environmental management that was supportive to health. When analyzing the relationship by Chi-square test, it was found that status of the family had the relationship with the aspect of environmental problem affecting health. The food preparation role in the family had the relationship with attitudes toward the environment and environmental management that was supportive

to health. The role of income generation and external social contacts had the relationship with environmental management that was supportive to health.

In this stage, the researcher considered the family as a system with boundary and interacted with the environment by drawing a picture of each family in the inner circle. The family system was composed from the structure of number of family members, persons who played the role of father, mother and children in the family, and the relationship they had according to their role. The second circle was environmental issues encountered by the family and the third circle was general environment, including both natural environment and human built environment. An arrow was an adaptation process of the family to the environment to maintain its balance.

A frame line of the system (a) was a boundary of the family, which was the line dividing between internal and external factors of the family. This psychic line was a catalyst of environmental problems affecting the family. Internal factor of the family within a psychic line was number of family members that affected size of the family structure and (b) ecological role (Niche) in which each family member possessed or social role that was measured by secondary role that each family acted toward one another within the family, illustrating mutual relationships of the members through the role of income generation, food preparation, decision-making on family problems and external social contacts. Family members possessed such roles and then expressed through behavior or action toward one another according to their roles through relationship binding, mutual consultation, warning and non-conflict activity doing (d) in order to respond to environmental problems by providing definition of environmental issue (e) that the family gave the real meaning to. This enabled the family to adapt itself to environmental problem with balance and was the promotion of the environment that was supportive to health by releasing capacity of health promotion that was inherent within the family.

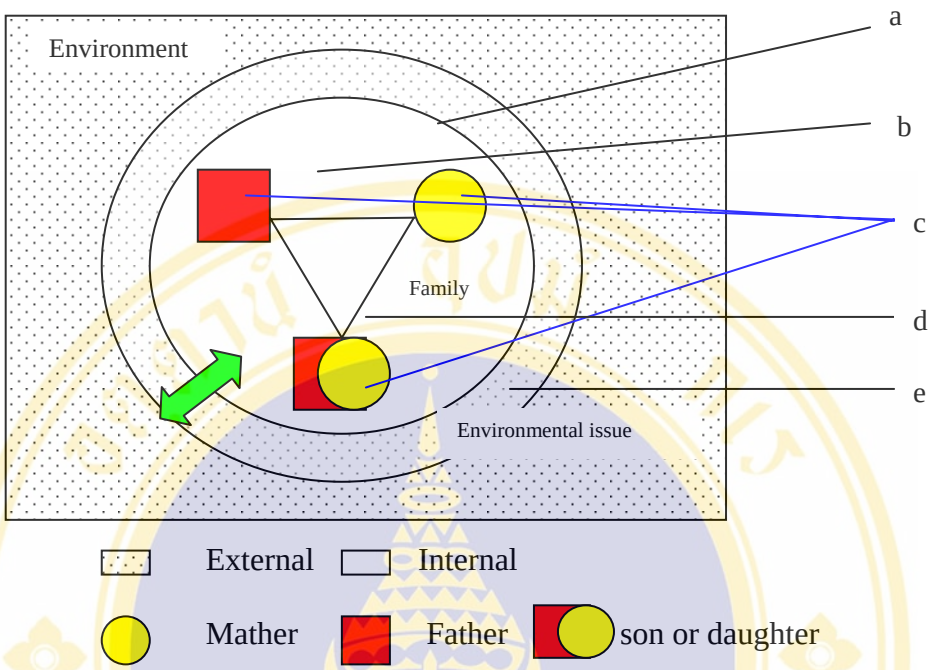


Figure 5 Ecological family model

An arrow or adaptation process of the family toward the environment to maintain balance was the adaptation of the family through the roles possessed by family members including the roles of income generation, food preparation, decision-making toward family problems, and external social contacts.

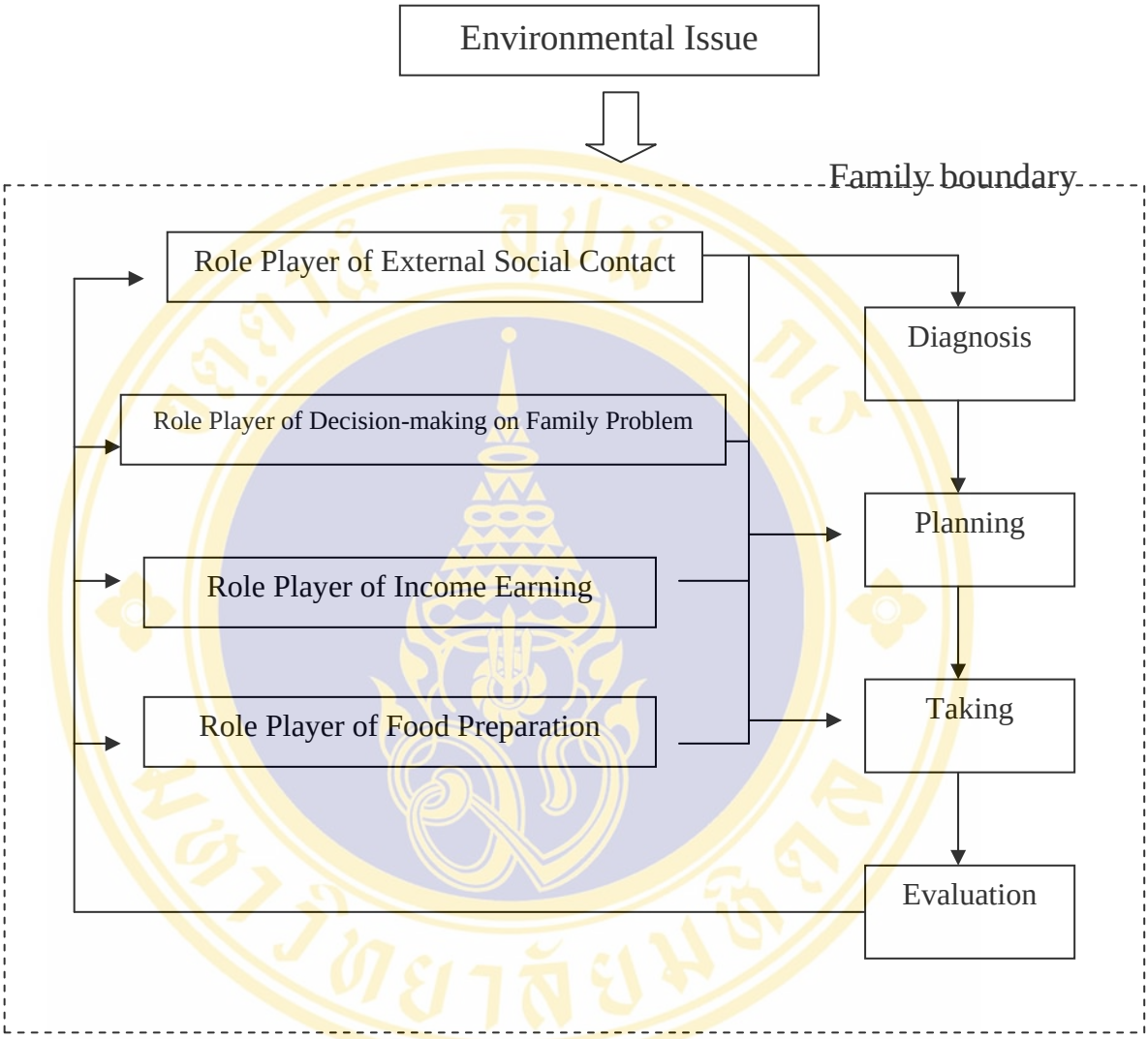


Figure 6 Adaptation process in the family

Health promotion was the promotion to enable the family to adjust itself to environmental problems and create the environment that was supportive to health. When family members had change in daily-life behavior and mutually performed activities to enhance the better level of health and well-being, health promotion would occur in the family.

Ecological family for health promotion was, therefore, the study of the relationship between the family and the environment that the family resided in by studying the adaptation process of the family when encountering environmental

problem as well as environmental management that was supportive to health of family members.

The adaptation process of the family consisted of important factors, including perception of environmental problem that was supportive to health, having good attitudes toward the environment, and having participation in environmental problem-solving of family members who obtained the status of father, mother and children whereby each member possessed the important role of decision-making toward family problems, income generation, food preparation for family members and external social contacts. When the family faced with environmental problem, family members would act through their possessed role by diagnosing the problem, planning, proceeding and evaluating result. This adaptation process was, therefore, ecological family model in health promotion.

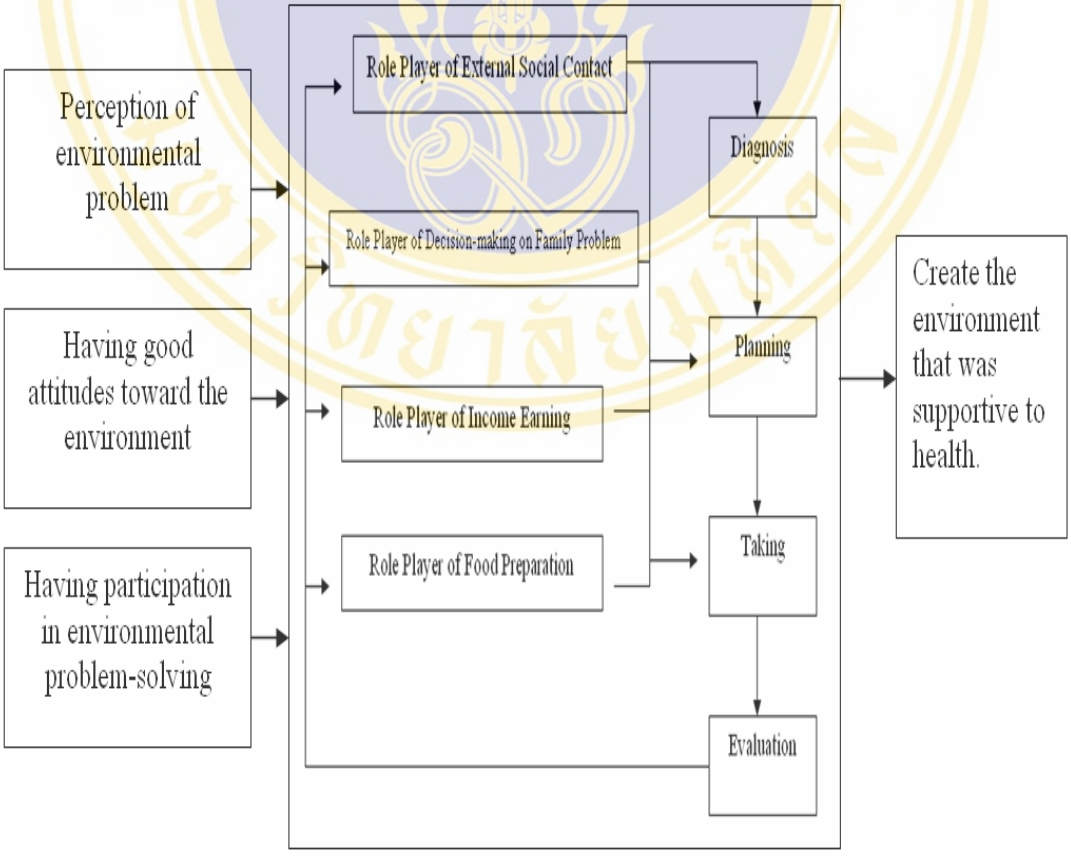


Figure 7 Outline of Ecological Family Model in health promotion

4.4 Model examination

4.4.1 Examination with experts

The researcher consulted the outlined ecological family model in health promotion with three experts who were Thesis Committee and received an advice to conduct the field examination and compare with the actual data.

4.4.2 Field examination

The researcher examined the ecological family model in health promotion with 20 families in the area of Bangsaipa sub-district, Banglen district in which the researcher selected by means of purposive sampling and the families volunteered to participate in this research project. The researcher presented research findings in 4 parts as follows.

Part 1: General characteristics of Thasrai Village

Part 2: Characteristics of the studied families

Part 3: Development process of ecological family model in health promotion

4.4.2.1 General Characteristics of Thasrai Village

1) Location and border: There is the total area of 2,458 rai, contributing to plain area (2,200 rai), water area (25 rai) and other areas (253 rai) (as illustrated in Figure 8). Borders are as follows:

The northern territory is closed to Bangpainart Village, Bangsaipa sub-district, Banglen district, Nakornpathom province.

The southern territory is closed to Thachang Village and Klong Piisamai Village, Bangsaipa sub-district, Banglen District, Nakornpathom province.

The eastern territory is closed to Bangpasri sub-district, Banglen District, Nakornpathom province.

The western territory is closed to Thachine River.

Figure 8 Thasrai Village

2) Population characteristics: The total number of population is 250, contributing to 110 males and 140 females, which are divided by the age range as follows: below 1 year old (1 person); 1-2 years old (4 persons); 3-5 years old (2 persons); 6-11 years old (22 persons); 12-14 years ols (13 persons); 15-17 years old (12 persons); 18-49 years old (123 persons); 50-60 years old (40 persons); and above 60 years old (33 persons).

3) Weather condition: It has the tropical climate with 3 seasons: rainy season between May and October; winter season between November and February; and summer season between February and April.

4) Physical characteristics: It is the low land close to Thachine River and has Pissamai Canal and Bangpainart Canal passing through the village. House settlement was done in group and was scattered along the basin of Thachine River and the roads that were cut through the village in parallel with Thachine River. It is the low land by the river with rice farming area of 437 rai. Most of the villagers are farmers. There are various services in the community, including one grocery, one Bangsaipa Sub-district Health Center, one Wat Bangpainart School (primary level); one Bangpainart Temple, one community police office and it is also the location of Bangsaipa Sub-district Administration Organization. Fundamental services are macadamized road, reinforced concrete road, and non-asphalt road. In term of water source, there is water supply of the village.

5) Background of the Village: Based on documentary research on background of the village and interviews on village background with elderly aged above 60, the researcher was unable to identify the first year of establishment of Thasrai Village. However, there was the story about the background as follows:

Originally, this village was bamboo forest and its area was close to Thachine River. In the past, the traveling was by boat. Villagers came into the area and possessed the area for their living by the river. The villager named Nart came to establish the temple; then, this area was called Bangpainart Village since the age of their parents. Previously, the area around Thacine River was a sand beach, having high and low water. When there was the division of village border, this village's name was repeated with Moo 7; as a result, it was changed from Bangpainart Village to Thasrai Village. Most of the people within this village had been resided in the village since their parent's generation.

6) Society and Way of Life: The relationships among families who lived in this village were like relatives. From the parents' generation who had settled in this village, the village headman said that "Everyone in our village lived together like brothers, that house was brother and this house was grandchild" The main career of the family was doing farming. Each family would hire other families in doing farming. They had good relationships to one another, there were no family quarrels to each other and they always participated in the activities of the village, such as, New Year's Day, Children's Day and religious important day. Because of the village area was located by school, sanitarium and temple which caused convenience to travel. There was an abbot to be the respect and admiration of people in the community. The temple divided the land to the folklores for rent in a cheap price. The village had money saving group which was the pride of every family. The money saving group's president told us that this was because the group committee was honest and wished every family to develop in order to have a better quality of life, therefore the group was sustainable and progress. Moreover the community leader had cooperation with the temple, school and sanitarium in doing various activities for village development.

7) Environmental Situation: The problems of the village were air pollution by bad smell and dust from alcohol and food factory, dust from ash, smoke from rice stubble and garbage burning and garbage. The cause was from the village had no management system and garbage bin, therefore the folklores had to remove garbage by themselves but in the wrong way by compiling and leaving it without neither burning nor burying, water pollution from the factory and rice farm where leave waste water into the river. This village was located at the end of water but the waste water was from the water source. It can be observed the pollution by floating fish. The house was located riverside but the folklores cannot use water for consumption but only for agriculture.

8) Health Situation: The sanitarium was located in the village so it was convenient for the folklores to get service when they had health problem and there had been the community medical center for a year where the physicians came to cure and every month. Anyway the folklores usually came when they were ill only and some families traveled to use the service at the district hospital because they wanted to be cured by the physician.

9) Family Beliefs: It was believed that male was the person who was the most important in the family because he was the leader and earned for the family. Male who were the husband and the elder child had to help the family earn a living. If there was the elderly in the family, they gained respect from their family; grandparents had the duty of instructing their descendants. The children had to obey their parents. Female had the role as taking care the being in the daily life, cooking, washing cloths, and cleaning house. When the children got married, they would separate to build their own house but still in the same area with their parents. For spouse selection in the past, parents were the persons who found the spouse for them, but at present time they selected by themselves. When they got married, female would come to live with male family. Both of them made a decision to each other about having baby. Female believed that after childbirth, she had to lie by the fire after childbirth. There was no preparation for baby cloth in advance. In the past using midwife but later using sanitarium and nowadays using hospital for every family.

Some families had grandmothers to help feeding their grandchildren. Parents thought that the son should compensate the obligation by ordain whereas daughter should be married or have the family.

4.4.2.2 Characteristics of the Studied Families

The researcher presented in the form of family structure, roles and relationships within the family as well as health status of the family.

Location of the families: The families located on both sides of asphaltic concrete road, which was the main road passing through the village. Some families situated by Thachine River; some situated far from the main road with macadamized road connected to other villages (as illustrated in Table 9). Families that worked in rice farming located their houses around their rice field area and had the rice field located in other villages.

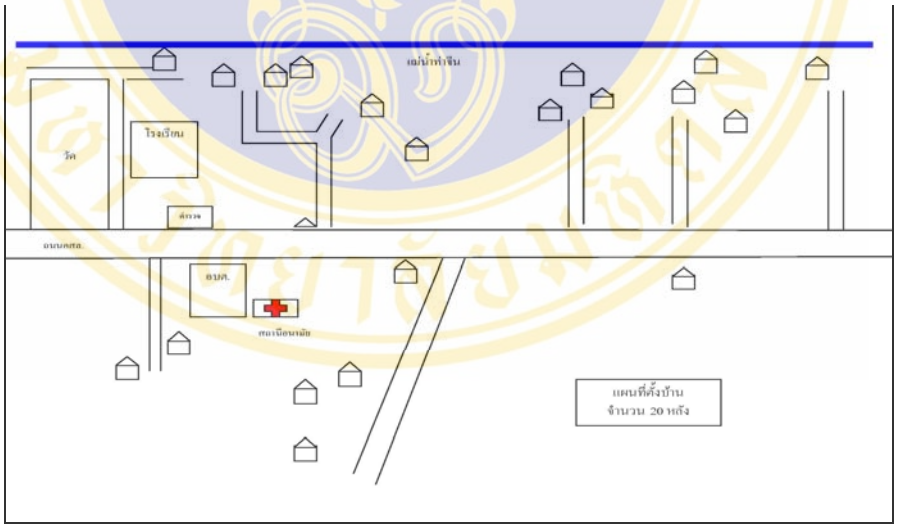
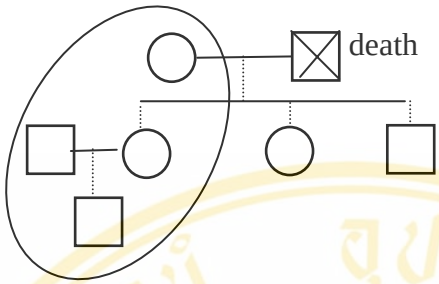
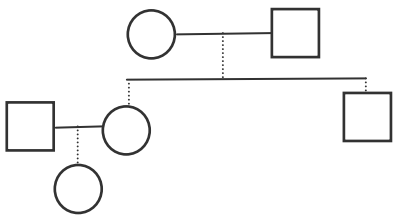


Figure 9 Location of the families

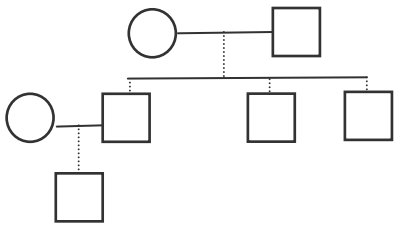
Details of the studied families were as follows:



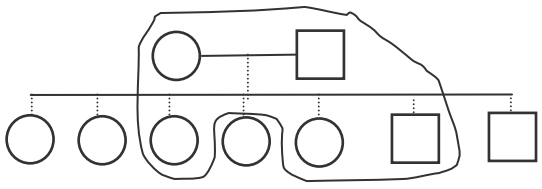
The first family: There were 4 members in the family; mother (67 years old), daughter (36 years old), son-in-law (36 years old) and nephew (1 year old). Mother did a job as noodle seller at the shelter on the roadside crossing the village. Daughter was an employee at a sanitarium; son-in law did general employment, rice farming, and fishing or depended on persons who employed him; mother was the person who earned a living as a leader of the family. Daughter and son-in-law helped mother to earn a living; mother was the person who bought facilities in the house, prepared food, took care of nephew. Mother sold noodles in the morning then went back home around 1.00 pm, while she was staying at home, she washed clothes and did housework. Her daughter would help her during a holiday. When mother and daughter went out to work, son-in-law was the person who took care of child or mother's nephew. Mother was the head of the family. Whatever she could do, she would do by herself, except when she got sick and had a headache from her congenital disease, high blood pressure and diabetes that she was treated by Banglen hospital. She took medicine continuously. Daughter took care of her when she was sick. Both daughter and son-in-law loved and obeyed her very much. If she instructed, suggested or warned something, both of them would follow her suggestions every time. Mother was the person who contacted with the relatives when there were religious affairs or other ceremonies and also contact with the organizations in the community for both internal and external.



The second family: There were 6 members in the family; father (59 years old), mother (50 years old), daughter (32 years old), son-in-law (34 years old), son (27 years old) and niece (12 year old). Father and mother did rice farming and general job depending on employers. Daughter was an employee who did the duties as housekeeper of a State Enterprise in Banglen district, son-in law did general job depending on employers, son worked at a rubber factory, and niece was studying at the primary 6 level at Wat-Bangpaina School. Father and mother were the persons who earned a living, mother woke up in the morning and cooked, father went to the rice field which he rented, about 10 rai area whereas mother went to the own rice field and had to wait for harvest time for 4 months. Father and mother were employed to beat rice, injected the herbicide in the rice field. Mother also kept rubbishes behind the market place on Wednesdays (there was the market place just only one day per week on Wednesdays afternoon). The family had incomes which were not sufficient for their expenses because they had to buy everything that were the facilities into the house; however they had food to eat every day. Normally, mother was the person who prepared food but didn't eat altogether; each member could eat when he or she was hungry without waiting to one another. Daughter sometimes help mother prepare food as well. Both of them were the persons who cleaned house, washed clothes. At night father and mother rowed the boat to find fish. Son could earn a living by his own but still eating with the parents family, gave money to parents sometimes but mostly he begged for money more than gave money to them. Daughter gave money to her mother 1000 baht per month. Son-in-law was the person who lived in the different village but when he had been married then moved into this house, he didn't have regular work, not intelligent, drink and smoke, however he had his own money by asking for his real mother. The burden of taking care of niece belonged to daughter. Son-in-law and daughter sometimes argued to each other about son-in-law's behavior but never had any quarrels. The members of the family thought that father was the leader in the family because he worked hard the most. The family had neither debts nor saving money. Both father and mother were the persons who contacted with the relatives when there were religious fairs or other ceremonies and also be the persons who contacted the organization both internal and external community.

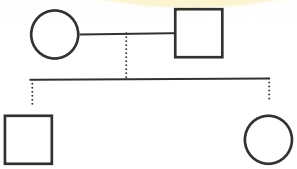


The third family: There were 7 members in the family; father (50 years old), mother (48 years old), 3 sons (22, 18 and 10 years old respectively), daughter-in-law (21 years old) and nephew (6 months years old). Father did a job as doing rice farming. He had own rice field (60 rai), mango garden and fish pond. Mother was a housewife. Her duties were preparing food, cleaning clothes of everybody in the family, helping father to do rice farming and gardening and taking the products to sell. The eldest son and the second helped father with the rice farming, the youngest son was studying at the primary 4 at Wat Bangpainart School. The members in the family thought that father was the leader because he was the person who earned a living. Both father and mother were the persons who contacted with the relatives when there were religious fairs or other ceremonies. Father was the person who contact with the organization in the community for both internal and external. Father and mother never quarreled to each other but sometimes they offended to each other. The members in the family consulted to one another about earning a living issue and increasing the products issue. Sons and daughters obeyed the parents' instruction. The members had dinner together. The family had no debts and had saving money to spend in the emergency time. When there were the activities in the community, father was the person who participated in the activities and supported the members to join the activities such as the important religious activities, other important days, etc. Father also helped the activities of the schools and sanitarium occasionally.



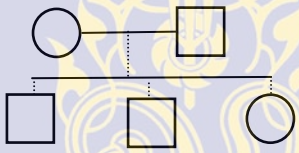
The forth family: There were 5 members in the family; father (79 years old), mother (76 years old), 2 daughters (46 and 44 years old respectively), son (40

years old). Father and mother were very old, so they were the consultants. Because o f having 7 children so all of children could send money and take care of their parents. Both of them were still strong. Father loves to attach the wooden cupboard for his hobby. Both father and mother helped to each other in growing vegetables, morning glories, water mimosa and fed various fish in the floating basket at the riverside of Thachine River. Mother kept the vegetables such as papaya, chionathus parkinonii and cabbage to sell at the Wednesday market place, Daughters and sons did rice farming, about 30 rai for the area. Mother was the person who prepared breakfast and lunch but for dinner was the duty of her children. The members had dinner together. For the facilities in the house, daughters and mother were the persons who bought them. Parents never quarreled to each other but for children, they argued to one another sometimes but never quarreled. Father was the leader of the family but the decision was from mother. Mother was the person who the members in the family respected and obeyed the most. Mother was the person who divided the duties to her children. For clothes, all of the members in the family had to wash by themselves. Mother was the person who contacted with the relatives when there were religious fairs or other ceremonies. Father was the person who contact with the organization in the community for both internal and external. The family had no debts but had saving money to spend in the emergency time. When there were the activities in the community, he would participate in the activities and supported the members to join the activities. He also helped the activities of the schools and sanitarium occasionally.



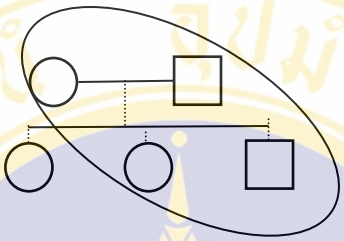
The fifth family: There were 4 members in the family; father (46 years old), mother (43 years old), son (43 years old) and daughter (10 years old). Father was a farmer by hiring the 20 rai rice field area and was a general employee. Mother was the person who prepared food, cleaned house, washed clothed for everybody in the family, took care of and nursed when members were sick. Mother was a public health volunteer of the village, picked up the crown flower for income, cut the parts from the rubber material which someone sent to her at her house. Son helped his father to do

rice farming; daughter was studying at the primary 3 level at Watbangpainart School. The members thought that both father and mother were a leader together in the family because both of them helped to earn a living to each other and make a decision about family problem. Furthermore they were the persons who connect with the relatives when there were religious fairs or various ceremonies and contacted with the organizations both internal and external. Father and mother never quarreled to each other, father indulged mother. Father didn't allow mother to do rice farming but let her stay at home and take care of the children. The son helped father in the field and he didn't want to study but promised her mother to study further the following year. The family had dinner together. The family had no debts but had saving money to spend in the emergency time. If there were the activities in the community, mother would participate in and support the members to join the activities. He also helped the activities of the schools and sanitarium occasionally.

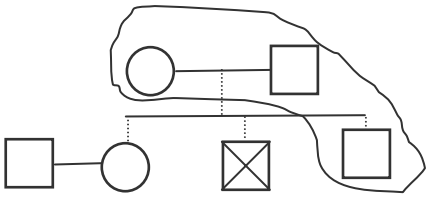


The sixth family: There were 5 members in the family; father (49 years old), mother (40 years old), two sons (21 and 19 years old respectively) and daughter (14 years old). Father did rice farming by renting 9 rai for rice field area and did general employment. Mother did general employment, picked up crown flowers and she also was a public health volunteer of the village. Mother was the person who took care of everybody's life, prepared food since morning but not having together, depends on their convenient. The family rarely had meal altogether. Mother was the person who washed clothed for father and daughter but the sons washed their clothes by themselves. Mother was also the person who cleaned the house. The two sons were employed about blocking rubbers, both of them gave money to their mom about 500-1000 baht. However the parents never asked for money their children. They just hoped their sons could stand by their own. The daughter was studying at secondary 2 level and she sometimes offended her parents, in the past she ever hurt her mother but this case didn't happen again during the past 5 years. The members thought father was the leader of the family because father earned a living for everybody. Both of father and

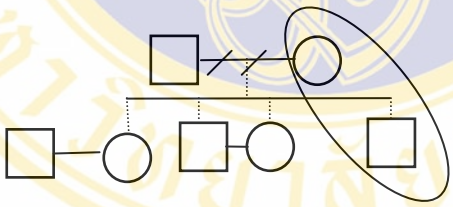
mother made a decision about family problem and they also contacted the relatives when there were religious activities and to contact the organizations both internal and external as well. Mother was the person who participated in and supported the members to join the activities such as the activity of sanitarium because it was the mother's duty.



The seventh family: There were 4 members in the family; father (53 years old), mother (53 years old), daughter (30 years old) and son (27 years old). Father did rice farming by renting 22 rai for rice field area. Mother did housework, prepared food, helped father to do rice farming sometimes. A daughter worked in the factory. The son was faced with bad health because he had eosinophils problem, so he sometimes helped his father. The eldest daughter who worked in upcountry sent money to her mother for 2,000 baht every month. Father was a committee of the village about opening the water door to folklores if they asked for. Parents never quarreled to each other. Father let mother make a decision for household affairs but everybody would consult to one another in critical issues. The member thought that father was the leader of the family. The family didn't have debts but had saving money for spending in emergency time. Father and mother were the persons who contact with relatives when there were various religious fairs. Father was the persons who contact with the organization both internal and external community. Father was the person who participated in the activities and supported the member to join them such as important day about religion or other important days. He would participate in activities if he was free from doing rice farming.

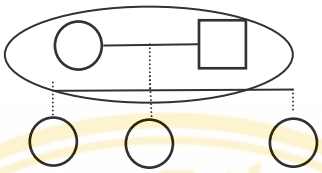


The eighth family: There were 3 members in the family; father (60 years old), mother (62 years old) and son (22 years old). Father did rice farming by having 15 rai rice farming. Mother did her duties about cleaning house, preparing for food and washing clothes to everyone (used the washing machine). She sometimes helped father with rice farming. The son helped father to do rice farming, daughter who had been married and separated to the new family gave money to her mom every month, 2000 baht. The main income of the family was doing rice farming. The members thought that father was the leader. Children obeyed both father and mother. Mother was the person who made a decision to buy facilities in the house. The family had no debts and had saving money to spend in an emergency time. Father and mother were the persons who contacted with the relatives when there were various religious fairs and connected with the various organizations both internal and external communities. When there were activities in the community, father and mother were the participants and supported the members to join the activities such as important religious day or other important days. They would help with the activities and supported the members to join.

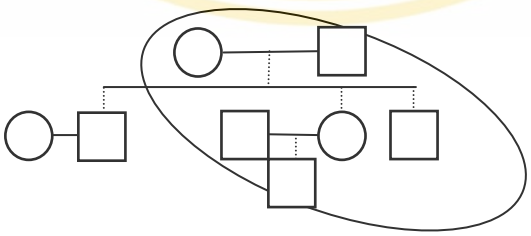


The ninth family: There were 2 members in the family; mother (49 years old) and son (15 years old). Mother and son did the duties as employee about blocking the rubbers at the aunt Rabearb's house. Mother was the person who cleaned the house whereas son washed their dishes and clothes (daughter was the person who bought a washing machine for them). 2 daughters had been married and they gave money to their mother occasionally, around 1000 baht per 2 months. Mother and son sometimes offended to each other however, the children obeyed and respected to their mother. The children thought that mother was the leader of the family. Mother was the person who contacted with the relatives when there were various religious fairs and connected with the various organizations both internal and external communities. The family had no debts but also had no saving money to spend for the emergency time.

When there were activities in the community, mother would participate in case of she was free from work.

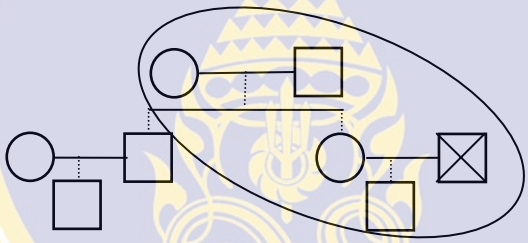


The tenth family: There were 2 members in the family; father (56 years old) and mother (52 years old). Father did the duties as driving the harbor of the Thachine River around in front of Bangpainart Temple. Mother sold fried meatball at the shelter on the roadside (afternoon time) Both of them were employed to wash the toilet too, swept the temple's floor, cut the trees and fed fish in front of the temple. Mother was the person who prepared food, cleaned the house. Father had driven the boat since the dawn then he had breakfast and lunch at the temple. Finally he went back to had dinner at home. The youngest sister sent money to him occasionally, 200-500 baht. Both of mother and father were the persons who contacted with the relatives when there were various religious fairs and connected with the various organizations both internal and external communities. The family had no debts but had saving money to spend for the emergency time. The kind of activities that father participated was about temple's activities. Father was the leader of the family; therefore he would be the person who made a decision toward problems



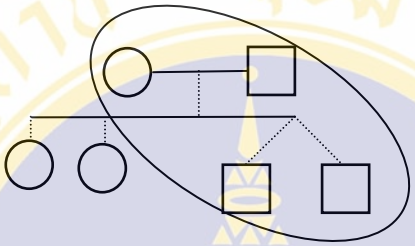
The eleventh family: There were 6 members in the family; father (51 years old), mother (48 years old), daughter (24 years old), son-in-law (25 years old) nephew (2 year old) and son (17 years old). Father, mother and son did rice farming with 13 rai of rice field area and did the additional occupation i.e. feeding frogs, catching fish and working in the orchid garden. Mother was the person who took care of house, prepared food. Daughter and son-in-law worked in the factory, they helped

mother prepared food and cleaned housed on holidays. Father and mother changed off to each other for looking after grand-child. Father was the leader of the family and the members obeyed him the most. When there was a problem, father was the person who made a decision and also made a decision about spending and saving money as well. Mother was the person who made a decision about buying the facilities within the house. Both of father and mother were the persons who contacted their relatives when there were religious or ceremony activities and contact with various organizations both internal and external community. When there were activities in community, father was the person who participate to and supported the members to join as well such as the important activities about religion and other important days i.e. New Year's day and Father's and Mother's day.

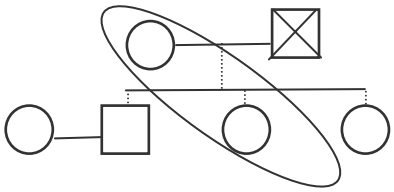


The twelfth family: There were 4 members in the family; father (70 years old), mother (67 years old), daughter (43 years old) and nephew (9 year old). Father and mother were the retired officials, father used to work about the irrigation, mother was a teacher. Nowadays mother helped her daughter produce the rubber to be the parts such as the armlet of bicycle which was originated by the son-in-law who passed away 5 years ago by employing the folklores in the village around 5 persons. Father gardened around the house, plant gardening vegetables for eating, and took care of the garden in order to make it beautiful. Mother prepared food, cleaned the house, washed clothes both father and herself. Daughter sometimes helped mother with housework but she looked after her son or mother's nephew by herself, took care of child's food and clothes and took care of child for going to school and coming back home from the Wat Banpainart School. The nephew was studying at the primary 2. Father and mother never conflicted to each other. Both father and mother instructed their nephew. All of the members obeyed their father. Father was the leader of the family. Mother and daughter was the persons who contacted their relatives when there were religious or ceremony activities and contact with various organizations both

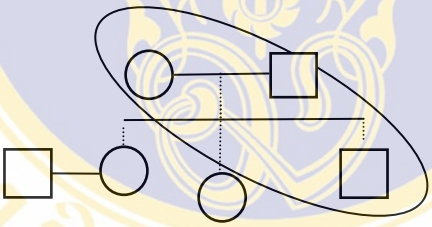
internal and external community. The family had no debts and had saving money to spend in the emergency time. When there were the activities in the community, father and mother were the persons who attended the activities and supported the members to join the activities. Every Buddhist holy day, mother would go to hold the religious precept. For other activities, if daughter was free from sending the products, she would join the activities.



The thirteenth family: There were 4 members in the family; father (51 years old), mother (50 years old), and twin sons (15 years old). Father and mother did rice farming by renting the 25 rai for rice fields, picked up the crown flower and composed the invented trees. The elder-brother twin worked at aunt Beab's house about blocking the rubber. The younger-twin brother was studying at secondary 3 at Wat-Po. On the weekend, they helped father and mother worked. Mother prepared food, two sons helped the family to clean the house and wash clothes. Both sisters worked in the factory at Nakornprathom province and rent the dormitory. The hardly visit the family, mostly came on holidays, they sometimes sent money to parents. The second daughter was the person who found the invented flowers and sent this task to the family to be the additional occupation. The main income was from doing rice farming. The family didn't have debts and had a little saving money. Father was the leader and made a decision about spending money and earning a living. The members listened to mother the most. Father was the person who attended the activities and supported the members to join the activities such as religious activities, if father was free from routine work, he would usually join the activities.

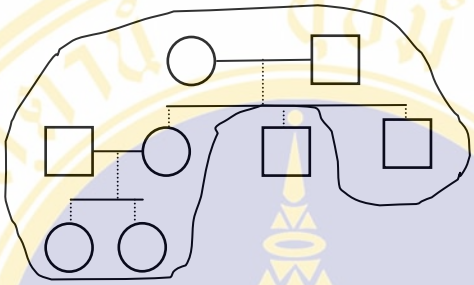


The fourteenth family: There were 2 members in the family; mother (60 years old), daughter (33 years old). Mother and daughter grew the morning glory and did the desserts for sales at the temple, Wat-Bangpainart School and Wednesday market place. The main income was from the selling. Both mother and daughter helped to each other to do housework, cleaned the house. Mother was the leader. They sometimes argued but still love to each other. Daughter obeyed her mother. When there was a problem, they would consult to each other and made a decision altogether. The family didn't have the debts but had just a little money. They didn't participate to any activity of the community because they had to find some money to earn a living.

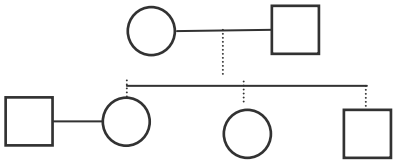


The fifteenth family: There were 3 members in the family; father (61 years old), mother (51years old), and son (28 years old). Father and mother did rice farming which they had own 30 rai for rice field area and the other 30 rai rice field was from renting. The son worked as the official at the State Enterprise. He went to work in the morning and went back home to stay with the family. He sometimes stay at home on holiday, he usually gave her mother money about 1000 baht. Mother was responsible for housework, cleaned house, prepared food, wash clothes (washing machine) for everybody in the house. Mother's health was not strong; she had blood pressure and had to take medicines continuously with Banglen Hospital. Father was strong. The eldest sister had been married and separated the family to build the house not far away from her mother's house. Mother always visited her there. The elder sister worked as an employee in Bangkok and this year she wasn't still be back. The other members in the family loved to one another; sometimes they offended to each

other, parents and son. In the household, mother made a decision but for earning a living and saving money was the duties of father. Children obeyed father the most. Mother was the volunteer of public health. She loved doing various activities and participated to the community activities such as sanitarium, school and temple. She also went to the temple every Buddhist holy day.

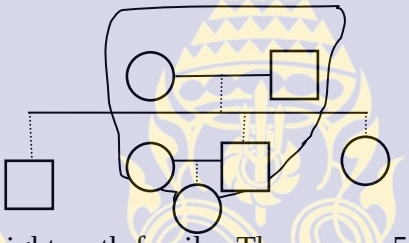


The sixteenth family: There were 7 members in the family; father (62 years old), mother (60 years old), daughter (29 years old), son-in-law (30 years old), 2 nieces (11 years old, 5 years old respectively), son (30 years old). Father was a retired official, teacher and mother was a housewife and stayed at home to take care of her niece, prepared food, cleaned house. Daughter and son-in-law had fish wells and the son-in-law also drove a school van. Father was a leader who was respected by people in the community. All members obeyed him. He was the person who made an important decision. Both father and mother had saving money whereas their children managed their money by themselves and gave it to mother to spend for facilities in the household. Daughter was the person who bought things for the house. Father was the person who participated to every activity and supported the members to join with.

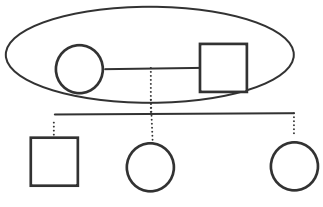


The seventeenth family: There were 6 members in the family; father (51 years old), mother (50 years old), 2 daughters (27 and 26 years old respectively), son-in-law (27 years old) and son (17 years old). Parents were teachers at Wat-Bangpainart School, they fed fish to be the additional occupation, there were 6 fish wells. Mother helped father to take care of fish wells and to be the housewife,

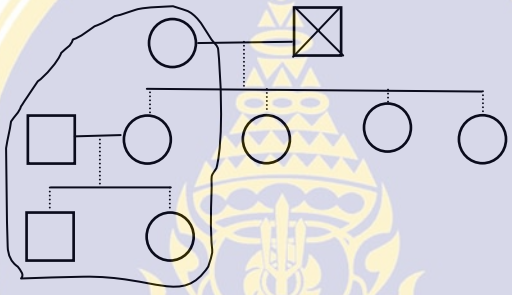
prepared food, cleaned house, washed clothes of herself, father and the youngest child. The eldest and the second daughter worked at the company. The son-in-law helped the family to take care of fish wells. The youngest child was studying at vocational year 2, the daughter who had worked was the person who bought food and facilities, the youngest son was still a burden of the family. The family thought that parents were the leader. Both of them were the person who contacted their relatives when there were religious or ceremony activities. Father contacted with various organizations both internal and external community. Parents sometimes offended to each other. The family did not have debts but had saving money to spend in an emergency time. When there were the activities in community, parents attended and supported the member to join with. They supported the school activity, sanitarium occasionally.



The eighteenth family: There were 5 members in the family; father (58 years old), mother (53 years old), son (30 years old), daughter -in-law (25 years old) and niece (5 years old). Father was the general employee whereas mother stayed at home because she was upset with heart disease and was treated at Chula Hospital, she had to take medicine continuously, she took care of niece. Son and daughter – in-law worked at furniture factory, daughter – in-law cleaned house, prepared food before work. The members loved to one another. Father took care of mother; father was the leader and made a decision about family affairs. Son and daughter worked at Nakornpathom province and went back home every month, they gave money to their parents every time, around 500 baht. The members hardly participate in the activities of community because they had to work.



The nineteenth family: There were 2 members in the family; father (51 years old), mother (49 years old) Both of them fed fish, grew mango garden, pomelo. The family had another house in Bangkok. All of three children worked in Bangkok and they would like to stay there. Parents visited them once a month. The main income was from selling fish. Mother took care of home, prepared food, washed clothes and helped father to feed fish. Father was the leader and made decision about things in the family. Children obeyed father the most. Father and mother offended to each other sometimes but never use power. Both of them participated to the activities in the communities.



The twentieth family: There were 5 members in the family; grandmother (52 years old), father (40 years old), mother (30 years old), son (11 years old), daughter (5 years old). Grandmother was employed to pick the crown flowers, looked after the niece and took care of the house. Father was the official of State Enterprise, mother worked at the factory. Father was the leader and earned a living. Mother bought things for the house, grandmother and mother prepared food. Parents would solve the problems together. The members loved to one another. Grandmother was the person who instruct niece. Everybody respected the grandmother, parents sometimes offended to each other when father drank beer at home but he never use power to hurt mother. Grandmother was the person who participated to the activities.

In conclusion, the studied families had 2-7 members within the family. Father, mother, son and daughter played their role in income earning; grandmother, mother and daughter played their role in food preparation; father, mother and grandmother played their role in decision-making towards family problems and external social contact. Every family had good relationships.

4.4.2.3 Development process of ecological family model in health promotion

The result of education in the development process of ecological family model in health promotion was resulted from the operation in assessment of problem and family's need. The family selected the way to operate, operated and assessed the operation. The researcher would present the results of the study by dividing into 2 parts; adjustment process in the family and results in environmental management in the family.

1) Adaptation process in the family

From the environment that the families resided in, the families had perception toward environment problem of the community concerning air pollution problem, solid waste problem and water pollution problem. The families perceived that air pollution problem affected health of family members. The families had good attitudes toward the environment and had environmental management that was supportive to health of family members. When the meeting was organized to solve community environmental problem, there was a representative from each family to participate in the meeting.

Family members collectively identified problems and needs of the family toward the environment in which the needs at the village level were congruent with the needs at the sub-district level. Family members decided to cope with environmental problem related to solid waste problem as the family had capacity to change the method of household waste management in order to mutually solve the problem. Those who participated in the meeting were the father, the mother and the grandmother of the family.

During the first period, family members who did not participate in the meeting did not know how to cope with solid waste problem and they still used the same method as before. There was a conversation within the family about solid waste problem. The mother who did not received information from the father who went to the meeting told that, "He didn't mention anything; he only said that he went to the meeting." Family members who were responsible for income generation still lived their normal lives by working in rice-farming or working as an employee, a gardener, a merchant, and a teacher. The person who was mainly responsible for income

generation was the father and the mother as well as the son and the daughter who was old enough to help the family. The person who was responsible for food preparation for all members in the family perceived that food preparation in the family created many wastes. “There will be more vegetable shells on the day that we cook.” “We bought foods at the market today and the wastes are mainly plastic bags.” Family members still did not perceive solid waste to be the family problem.

The family lived with mutual caring and sympathy. The father though of the family and wanted everyone in the family to be happy. Both father and mother wanted their children who were successful in study life to get a job and have a family of their own, as well as wanted the son to become a monk in order to requite their parents. Children who were not a family burden helped their parents to earn income to support the family and look after parents when they were old. Family members knew about what family members liked or didn’t like. Children knew what their parents didn’t like and then tried to avoid it. For example, a child from one family escaped at night to party with friends in the village even though he/she knew that the parents didn’t like it; the father was angry and didn’t talk to him/her and the mother was the one who compromised until the father forgave the child. Children in some families only considered their own interests or wishes and perceived the mother to be grumbling, but they knew that it was because the mother cared for them. The grandmother helped the father and the mother to warn the children. There was an encouragement and mutual caring in daily life. When family members were sick, other members would help looking after one another until that person got well. There was a conversation asking about well-being between family members. Children from every family obeyed their parents. Some families used to have conflict in the family due to behavior of the father or the children. For examples, in the family where the father drank alcohol, the mother was dissatisfied and there was a quarrel without physical abuse. The child who smoke made the mother unhappy and there was a warning by hitting with a wooden stick, but the child still secretly smoke cigarettes because the mother forgave him and accepted the child’s behavior as she perceived him to grow up. When the problem occurred within the family, if the problem was small the mother will be a person to solve the problem. However, when the problem was unsolvable, the father would be the one to deal with it. In contrast, in some families the father and the

mother would consult each other while other families would allow every family member to acknowledge about what happened within the family. For instance, low productivity that resulted in a decline in family income; members would consult with one another to find a solution to it while in some families the father and the mother would consult with their relatives to ask for help and to receive help such as asking for the division of rice farming area for rental in order to increase productivity.

In the later period, the researcher organized the meeting stage for exchanging and providing knowledge in order to develop solutions to environmental problems that the family had previously managed in the first period. A representative from each family who participated in the meeting was the same person who participated in the first meeting and decided to deal with solid waste problem and manage the environment that was supportive to health according to suggestions from the meeting.

The father, the mother and the grandmother shared results of the meeting with family members; some shared with family members right after they arrived home; in some families the father discussed with the mother before going to bed; the grand mother consulted with the mother about new arrangement of the house. Family members who earned income into the family perceived that segregation of wastes would help create more income into the family; some equipment that were chemical containers that family members had never known that they could be sold and now they knew, they would keep them for selling and not dumping them as before. On the other hand, food preparation also created many wastes, but they could be used for animal feeding and producing compost.

Family members showed mutual loving and caring for one another in which when the father, the mother and the grandmother wanted to solve environmental problem in the house, every family member would cooperatively look after the house and the area around the house. All belongings in the house were kept and cleaned tidily. The father, the mother and the children who grew up helped one another coping with solid waste in the household. The father, the mother and the grandmother monitored by warning and teaching them. The children who were still young and were a family burden were taught by their parents on how to behave appropriately to the implementation of this activity. “The mother told me that a doctor

will visit our house, so we have to clean our house and throw away wastes in a designated area because the doctor has taught us. He will come to check for results." In some families, the mother told that, "I keep telling them over and over again and they still throw aware wastes altogether" "Our nephew and niece just throw away their snack packages around after eating them even though I keep telling them not to" and the mother was a person who cleaned the house. One family placed a large plastic bag in the middle of a house and told their children to throw away dry wastes that were plastics in this bag while garbage had to be dropped in a bin placed in a kitchen. When asking the children about how to throw away the bag with water, the children answered that the water must be poured out first and then kept a plastic bag here. The father helped the mother in instructing their children. The mother, the daughter and the grandmother were responsible for food preparation and housekeeping.

The family had mutual consultation between the father, the mother and the children about solid waste management. Family members helped one another digging a water drainage canal that the wastes were piled up, making the canal shallow. Some families helped one another arrange the area around the house beautifully by planting trees and flowers. The mother told that it was her daughter's idea, and the father and the mother agreed. Their eldest son also took part in watering the plants and flowers sometimes. In the family that did not previously have a closure for a bin, the father and the son helped each other making the closure from pieces of woods. The family that wastes were piled up had separated them by using woods to make a stable in order to keep them in place. "My father said that we should find more bins and mother agreed, but it will be better if we put them in a sack." In some families, the children who were educated helped searching for the price of papers and plastic bottles to prevent from price depression from the waste buying car. The adaptation process in the family did not lead to conflict of family members in doing activities together, which were mostly discussion or consultation. There was a mutual warning of family members, which demonstrated mutual loving and caring that came from forgiveness by the parents when the children didn't behave in accordance with family's decision-making. "He is still young, so we have to keep teaching him slowly. We are his parents; that's why we have to clean up on the things he does."

Those who obtained the mother status had the major role in taking action in the family by being responsible for warning all members to be compliant with family's rules. In addition to the full-time job of looking after well-being of other family members in terms of food preparation, clothes washing, and housekeeping, the mother was also a person who ordered and request other members to segregate wastes, store wastes and eliminate wastes using a correct method as well as looked after family members to live in the environment that was supportive to health by finding clean water for consumption, preparing clean food and promoting health of family members. However, it was found that children in some families still behave as before by providing the reason that, "the mother will separate wastes by herself anyway" or "The mother will tell us to take it out before burning anyway" while the father from some families told that, "Just throw them away together first and then we can separate them later before burning because we do it by ourselves."

The family demonstrated the adaptation process when coping with environment problem whereby each family member expressed behavior through the role he/she possessed in the family by diagnosing environmental problem, planning for implementation, taking action and evaluating results of action.

2) Outcomes of environmental management

The operation started from evaluating the problems and family's need. From bringing the problem information in the sub district level which were garbage and air pollution to be the fundamental information for making the decision of the family members, it was found that the family chose to solve the garbage problem because it was the problem from family and didn't receive the service from the organization in the area and also the family viewed that they could manage this garbage problem with their existed potentials. Whereas air pollution problem had been occurred for a long time for this area and it was solved by the related organization by investigating the air quality. The area that the family lived would have bad smell after raining only and it was not serious like in the past which both bad smell and dark smoke that was blowing and attaching the clothes. The researcher would like to present the results in environmental management of the family by presenting the results of garbage management of the family to be two phase which were; the first

phase, it was the phase that the family operated by themselves and the other was after they had received knowledge from the scholars already including the environmental management supported to the health of the family by having the details as follows

The first phase; the family separated the dry garbage from the wet garbage and some families still compiled the hazardous waste together with the dry garbage (see table 15). For the garbage keeping of the family, it was found that most of them had the container contained the dry and wet garbage, hazardous waste was kept carefully more than a half of the number of the family (see table 16). For the garbage remove of the family, it was found that the dry garbage which could be sold, the family would take it to sell, wet garbage would take to do the compost, feed animals and leave it into the river. The hazardous waste in terms of container contained chemicals would be sold and the rest would be compiled altogether (see table 17).

Table 15: Waste Segregation of the Families

Type	Number of families that have waste segregation	Number of families that haven't waste segregation
Refuse		
- Paper	17	3
- Plastics	20	-
- Glass bottle	20	-
- Metal	20	-
- Cloth	-	20
Garbage		
- Plants	17	3
- Vegetables	15	5
- Fruits	15	5
- Food scraps	15	5
Hazardous Waste		
- Battery	4	16
- Spray cab	4	16
- Chemical containers	11	9

Table 16: Storage of Solids Waste of the Families

Storage	Number of Families
Refuse	
- Piling up	5
- Having container	15
Garbage	
- Piling up	-
- Having container without closure	17
- Having container wit complete closure	3
Hazardous Waste	
- Piling up	9
- Carefully stored	11

Table 17: Waste Disposal of the Families

Type	Number of the families that eliminate waste by method of:						
	Selling	Land filling	Burning	Producing compost	Animal husbandry	Throwing away in the river	Piling up
Refuse							
- Paper	18	-	2	-	-	-	-
- Plastics	20	-	-	-	-	-	-
- Glass	20	-	-	-	-	-	-
bottle	20	-	-	-	-	-	-
- Metal	-	-	18	-	-	-	2
- Cloth							
Garbage	-	1	-	3	13	3	-
- Plants	-	1	-	3	12	4	-
- Vegetables	-	1	-	3	12	4	-
- Fruits	-	1	-	2	13	4	-
- Food scraps							
Hazardous Waste							
- Battery	-	5	3	-	-	-	12
- Spray cab	-	2	4	-	-	-	14
- Chemical containers	11	-	-	-	-	-	9

In the later phase, the family managed the garbage better by managing the garbage by separating dry, wet and hazardous waste. The family who compiled altogether would obstruct the area to be proportion, had the มีcontainer for

containing both with a lid and without a lid, remove the garbage by selling, ฝัง, burning, doing the compost and feeding animals. For little parts of waste food were left into the river. The family separated the garbage like the past. When being asked about cloth garbage, it was found that the family didn't rather have such a kind of this garbage whereas some families separated the cloth into the plastic bag in order to keep to cobble clothes. Several families still did like the past with wet garbage. There had been the separation of hazardous waste in terms of container contained chemicals, flashlight/ batteries, colored can/spray (see table 18). The family garbage keeping, it was found that the family that compiled the dry garbage and had the wood to obstruct for proportion had 3 families, the container contained wet garbage with a lid had 2 families and the hazardous waste compiled to be proportion and separated carefully (see table 19). For the garbage remove of the family, it was found that the wet and dry garbage remove of the family was still be the same as the past, the hazardous waste in terms of flashlight/batteries, colored can/spray were put separately in the fertilizer bag and basket (see table 20).

Table 18: Waste Segregation of the Families

Type	Number of families that have waste segregation	Number of families that haven't waste segregation
Refuse		
- Paper	20	-
- Plastics	20	-
- Glass bottle	20	-
- Metal	20	-
- Cloth	2	18
Garbage		
- Plants	17	3
- Vegetables	16	4
- Fruits	16	4
- Food scraps	15	5
Hazardous Waste		
- Battery	15	5
- Spray cab	15	5
- Chemical containers	17	3

Table 19: Storage of Solids Waste of the Families

Storage	Number of Families
Refuse	
- Piling up	2
- Having container	15
- Separate into section	3
Garbage	
- Piling up	-
- Having container without closure	15
- Having container with complete closure	5
Hazardous Waste	3
- Piling up in section	17
- Carefully stored	

Table 20: Waste Disposal of the Families

Type	Number of the families that eliminate waste by method of:						
	Selling	Land filling	Burning	Producing compost	Animal husbandry	Throwing away in the river	Having container
Refuse							
- Paper	18	-	2	-	-	-	-
- Plastics	20	-	-	-	-	-	-
- Glass bottle	20	-	-	-	-	-	-
- Metal	20	-	-	-	-	-	-
- Cloth	-	-	18	-	-	-	-
Garbage							
- Plants	-	1	-	3	13	3	-
- Vegetables	-	1	-	3	12	4	-
- Fruits	-	1	-	3	12	4	-
- Food scraps	-	1	-	2	13	4	-
Hazardous Waste							
- Battery	-	6	1	-	-	-	13
- Spray cab	-	6	1	-	-	-	13
- Chemical containers	16	2	-	-	-	-	2

While the family were managing garbage, they were doing other activities in order to organize the environments supported to the health of the family members by every family d would keep the things in household orderly, clean house at least every day, cut the grass around the house, decorate the house by planting both gardening and flowers, dig the canal which had garbage compiled till it was shallow.

The area for burning garbage was the obstruction to be the proportion for preventing the spreading. Moreover the family still took care of the members in the family to use their life by having clean food and non-toxic with their health such as cooking food to be ripe, preserve the food, having clean water for consumption. Some families bought filtered water from the strainer of the village; some families brought rain water to boil before drinking it. Water for use was the water supply of the village and had the clean container to support before using and wore clean clothes which mother was the person who usually took care of it.

4.5 Ecological family model in health promotion

When consulting the outlined ecological family model in health promotion with experts who were thesis committee and examining the area of Bangsaipa sub-district, Banglen district, Nakornpathom province, with 20 families, results indicated the following.

The families had the adaptation process when coping with environmental problem and managed the environment that was supportive to health of family members though the roles that each member possessed. The father, the mother and the grandmother had the role of external social contacts and were the persons who participated in activities during the first period by exchanging of information and making a decision that would solve the occurred environmental problem, which was solid waste problem. Those who held status of the father, the mother and the grandmother showed perception of environmental problem in the community, good attitudes toward the environment and the needs to participate in solving the occurred environmental problem by dealing with solid waste problem of each family according to their capacity. Result during the first period was still the same in term of the conditions occurred in the family prior to their participation in the meeting.

Persons who were responsible for external social contacts of the family were the father, the mother and the grandmother, which was confirmed by the organization of the next meeting to exchange and provide knowledge to the family. The father, the

mother and the grandmother were the same family members who participated in the meeting and this time they brought information to consult with family members.

Family member who had the decision-making role diagnosed problem that was occurred in the family whereby there was a consultation with other members in some families while in some families the member possessed both decision-making role and external social contacts role.

Family member who had the role of food preparation and income earning demonstrated their participation in planning, acting and evaluating by mutual consultation, warning and activity doing without any conflict.

From an examination in some areas, it was found that the factor that was lacked in ecological family model in health promotion was knowledge in environment problem management, which was an essential mechanism that created change in behavior of family members in their adaptation to solve environmental problem and manage the environment that was supportive to health. Family members who obtained the role of decision-making of the family demonstrated the importance of being the person who diagnosed the problem.

Ecological family model in health promotion was, therefore, the relationship between the family and the environment that the family resided in whereby the family demonstrated the adaptation process when encountering environmental problem and management of the environment that was supportive to health. It began from family members had perception toward environmental problem, good attitudes toward the environment, and knowledge of environmental problem management as well as participation in environmental problem-solving through the roles possessed by family members in which family members were a decision maker toward the family problem, diagnosed environmental problems, consulted with the members who were responsible for income earning, food preparation and external social contacts in order to plan and act collectively with love and care and without any conflict, enabling the family to have environment management that was supportive to health of the family.

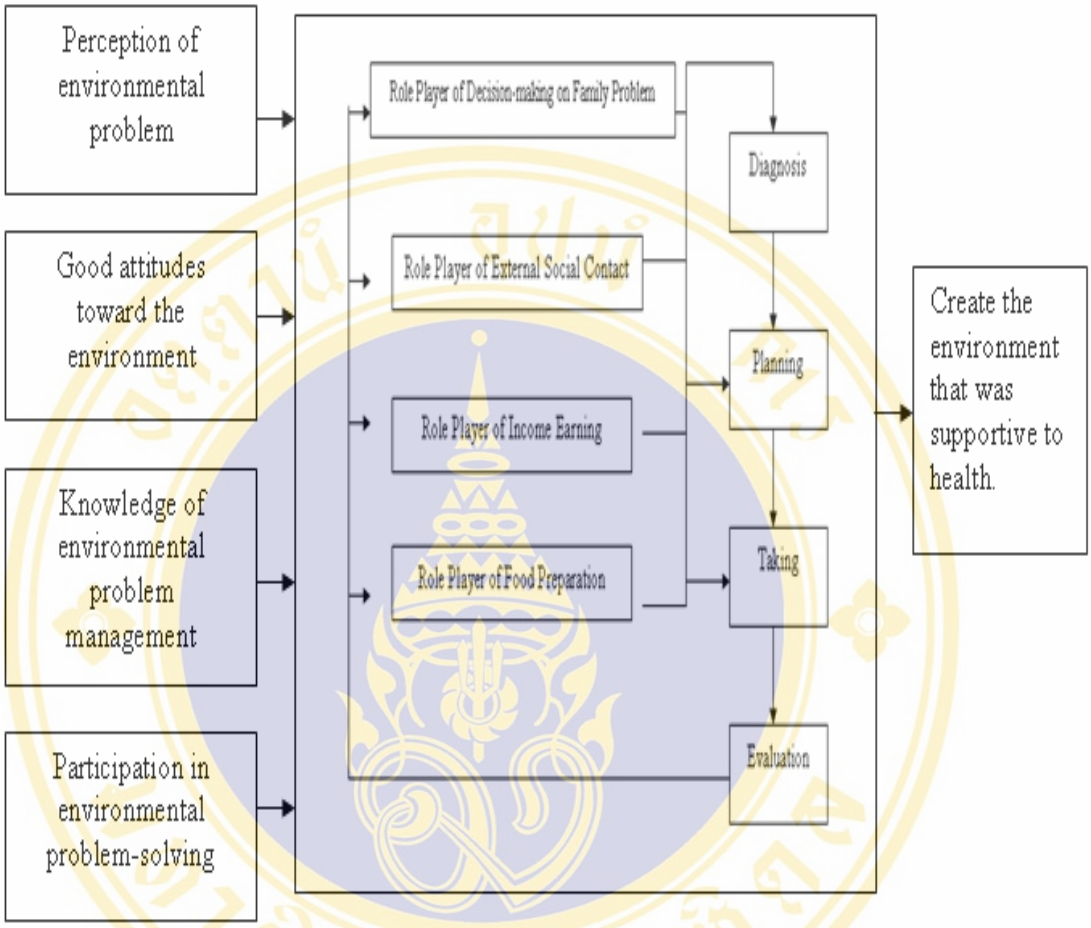


Figure 10 The ecological Family Model in health promotion

CHAPTER V
DISCUSSION

The purpose of this research was to develop ecological family model in health promotion by conducting a research to find the model. The researcher will discuss two issues as follows:

1. Ecological family model in health promotion
2. The development process of ecological family model in health promotion

5.1 Ecological family model in health promotion

From research findings, ecological family model in health promotion was the relationship between the family and the environment that the family resided in which the family demonstrated the adaptation process of the family when coping with environmental problem and environmental management that was supportive to health. It was a new form of lifestyle of the family for the environment and health. The family perceived environmental problem and value of the environment, had good attitudes toward the environment as well as knowledge development that led to changes in behavior in solving environmental problem.

The family was a structural system that composed of family members and was sustained by good relationships with one another. Each family member would maintain their possessed status in the family, which was the father, the mother, the children and the grandmother in which each person would play the role in maintaining balance of the family. From the study, such roles were the role of decision-making toward environmental problem, income generation into the family, food preparation for family members, and external social contacts.

Family members expressed behaviors through the role that they possessed by diagnosing environmental problem, planning and acting together with love and care as well as warning without any conflict, enabling the family to have environmental management that was supportive to health.

The researcher will discuss ecological family model in health promotion in the issue of the family with the environment in Bangsaipa sub-district, family characteristics and adaptation of the family.

5.1.1 Family and the Environment in Bangsaipa Sub-district

The relationship between the family and the environment in Bangsaipa sub-district, Banglen district, Nakornpathom province was studied through a survey research from 200 families. Research findings were as follows.

5.1.1.1 The family perceived that environmental problem affected health whereby the family perceived air pollution problem to affect health the most while solid waste problem and garbage problem had the low effects on health. This was because there was alcohol manufacturing industry that was the source of bad smell. The family directly perceived the problem of air pollution from bad smell; it made them feel uncomfortable when breathing in unclean air. As a result, they perceived air pollution problem to directly affect health. In the meantime, the family had not yet experience a severe problem from garbage and solid wastes. Some families received waste collection service from related department who was responsible in the area. Therefore, they perceived solid waste problem and garbage problem to have the low effects on health.

5.1.1.2 The family had good attitudes toward the environment in which they thought that if people cooperatively looked after the environment, the Thai society would be happier. Due to current environmental deterioration problem, the family perceived that their house should be in a good environment and the family would have better quality of life if they lived in better environment. The family also perceived that the area around the family had small environmental problem. This was

due to the current trend of environmental conservation had been widespread. There was dissemination of environmental information via different forms of media and the related departments also actively promoted environmental campaigns, which enabled the family to perceive information and news from various media and have good attitudes toward the environment.

5.1.1.3 The family managed the environment that was supportive to health in which there was the highest proportion of the families that had defecation in the toilet in order to protect from contamination of diseases attached to stools. There was also clean water for drinking and usage, and members in the family did not keep electricity on. This was because of information perception of the family from different media and effective working of related departments in the area. On the other hand, the family had herbal plantation for the treatment of illness in a low level because the family did not give importance to herbal treatment and the family also gained an access to modern public health services. When they were ill, they would receive treatment at a health center or a district hospital.

5.1.1.4 Status the in the family had the relationship with perception toward environmental problem affecting health whereas number of family members, occupation, education level, monthly family income, residential characteristics of the family and residential ownership characteristics had no relationship with environmental problem affecting health, good attitudes toward the environment as well as environmental management that was supportive to health. This was because status in the family including the father, the mother and the children was a secondary role that each family member acted toward one another. Differences in age, experience and perception established the relationship with perception of environmental problem affecting health.

5.1.1.5 The role of food preparation had the relationship with attitudes toward the environment and environmental management that was supportive to health. This was because most of the food preparers were females who currently had educational opportunity and more participation in the labor market as well as looked

after the house and the wellbeing of family members. Females had contacts among the group of females themselves, which enabled them to receive news and information and to develop their own capacity.

5.1.1.6 The role of income earning and external social contacts had the relationship with environmental management that was supportive to health. This was because family member who had the role of income earning and external social contacts was mainly the father. While other members might have the role in one aspect, the father had the roles of income generation, external social contacts and decision-making toward important family problem. This enabled us to see the power system in the family. The father should, therefore, be the most influential person on the behaviors of other family members. Peter M. Blau (1964 cited in Pajongjit Pitakpakorn, 2000: 78) state that relationships in the form of exchange would lead to power relationship in case that one side could provide more benefits but another side had nothing in return or less reward. The side with less reward would apply “an acceptance to be under the power” as an exchange.

5.1.1.7 Environmental problems that should be improved were solid waste problem and air pollution problem. Solid waste problem was the problem found in both the community level and the national level. Solid waste problem occurred from ineffective management system or the lack of management system. In Bangsaipa sub-district, the responsibility in dealing with solid waste management system belonged to the Sub-District Administrative Organization that still didn’t have the system of solid waste management that was tangible. Therefore, the families resided within the area had to manage solid wastes by themselves according to their capacity. In contrast, concerning air pollution problem, there was still no Report on Air Quality Monitoring in Bangsaipa sub-district.

The families resided in Bangsaipa sub-district demonstrated the interaction between the family and the environment and the needs to live their lives in balance with the environment that the family resided in.

5.1.2 Family Characteristics

Research findings indicated that the families in Bangsaipa sub-district had the structure, the roles and the relationships of family members as follows.

5.1.2.1 Family structure: The majority of the families were a nuclear family with number of family members approximately 1-5 persons, which was congruent with a reflection of the lives of the Thai people (Apichai Pantasen and Duangmanee Laowakul, 1994: 371) in which it was stated that the family was changed from an extended family to a nuclear family and the size had become smaller. It was also a change of the Thai families in the globalization era (Somporn Tepsittha, 1995).

5.1.2.2 The roles of family members were consistent to one another and help reinforcing the roles of one another in a way that family members helped one another in earning income into the family. Research results indicated that number of the families that had the father as the only person who earned income was less than the families that had the father, the mother and the children earning income together. The grandmother, the mother and the children were responsible for food preparation for family members. Research findings showed that no family had the father responsible for food preparation for family members while the father from most families was responsible for decision-making toward family problem that was important to the family as well as responsible or external social contacts.

5.1.2.3 Family relationships: The family had good relationships with one another. Family members lived together with mutual love and sympathy. There was a conflict sometimes, but none of the families had family members quarreled. The children obeyed their parents. The husband and the wife had the strong relationship. The father and the mother cared for their children.

From characteristics of the family structure, the roles and the relationships of family members, they illustrated the patterns of the way of lives of the Thai families which did not change significantly from the past. The family structure in Bangsaipa

sub-district was congruent with most of the Thai agricultural families; the father was still the head of the family and was an influential person on other members in the family while females in the family were responsible for looking after the wellbeing o family members by displaying the distinctive role in food preparation for family members. Economic and social changes in the Thai society forced family members to help one another earning income into the family. The father was no longer the only person who earned income to support family members. The children who were at the age of study were still a family burden. The children who were graduated (Matthayom 3) had to work in order to help their families.

5.1.3 Adaptation of the Family

Study results showed that the families had adaptation as follows:

5.1.3.1 Knowledge in environmental problem management was an important mechanism that created behavioral changes of family members in addition to perception of environmental problem, having good attitudes toward the environment, and participation in solving environmental problem. Knowledge in environmental problem management meant perception of stories, facts, principles, methods, and approaches in managing environmental problem correctly. Results of the action were that the family demonstrated the behavior of solid waste management through their lack of knowledge in correct solid waste management. When the family received knowledge from the scholars, the family changed its behavior in solid waste management, which created better results comparing to the first time that the family managed solid wastes by themselves.

5.1.3.2 Perception toward environmental problem of family members required the application of existing knowledge or previous experience was the tool for interpretation of the objects into knowledge and understanding about environmental problem. Family members could perceive environmental problem that they encountered when the research stimulated with the process of model development,

which demonstrated that family members had some knowledge about environmental problem.

5.1.3.3 Family members had good attitudes toward the environment in which in the initial stage family members answered to an attitudinal test, which was constructed by the researcher using Likert scale. It was found that the mean of 3.78 indicated that family members had good attitudes toward the environment, and when there was the action, family members demonstrated behaviors that were congruent with their attitudes which was solving environmental problem that they encountered.

5.1.3.4 Family members showed their participation in solving environmental problem. From the implementation, the family consistently participated in the project and cooperated in various activities even though in the initial stage it was found that the family participated in expression of opinions on community problems in the low level and took part in decision-making on identification of environmental problem that was the problem of the community in the low level because the community still did not have cooperation for solving environmental problem systematically and seriously.

The families had behavioral changes in solving environmental problem from their perception of environmental problem, good attitudes toward the environment, and needs to participate in environmental problem solving. When they obtained knowledge in correct environmental problem management, they began to solve the problem systematically, which enable the families to adapt themselves to maintain balance with the environment and have interaction with the environment that would lead optimum benefits with the lives and created the new form of health promotion through capacity release of the families.

5.2 The Development Process of Ecological family model in health promotion

The development process of ecological family model in health promotion was a formative research; therefore, the researcher discussed the issues occurred in the development of the model from the beginning as follows.

5.2.1 Initial stage

Initial stage was the study of the relationship between the family and the environment that the family resided in. The researcher planed for the study of the large environment prior to the study of the smaller environment in order to perceive the environment that the family resided in as much as this study could perform by dividing the study area by administration area, which was the sub-district level, and then selecting the implementation at the village level. Results showed the relationship between the family and the environment that the family resided in to be ecological family of Bangsaipa sub-district, Banglen district, Nakornpathom province.

In the initial stage of the study of the relationship between the family and the environment that the family resided in, the researcher conducted a survey research in order to find general information of the family, the roles of family members, and current conditions, problems and needs of the family in the environment through stratified sampling and used questionnaire as the tool for data collection. The collected data was used to analyze the relationship. In this stage, there were many improvements and corrections in the tool prior to the pre-test, which resulted in high reliability value.

The data obtained from this stage was the important starting point of the development process of ecological family model in health promotion because ecological family model in health promotion was developed for the implementation in the area of Bangsaipa sub-district.

5.2.2 Formation stage

Formation stage was the application of the data from the study area into analysis based on the review of related documents to ecological family in the Thai society. Result in this stage was the outline of ecological family model in health promotion by demonstrating the interaction between the family and the environment that the family resided in. The researcher created a psychic line to illustrate the boundary of the family system that was separated from the environmental system by considering internal factors of the family, including the family structure, the roles possessed by family members, and the relationships of family members, as well as external factors that the family had interaction with, which was environmental issue inherent in the environment that the family resided in. An arrow was a symbol that was imaginatively created in order to illustrate the adaptation process of the family to the environment in order to maintain it balance.

The researcher wanted to assess the relationship between the roles of family members and environmental problem encountered by the family; therefore, the roles of family members that were obtained from the study in the area at the sub-district level were placed in the diagram in order to examine behaviors that were expressed according to the roles possessed by family members.

In problem solving procedure, the researcher applied the process from the principle of action research (Coghan and Brannick, 2001: 17) in order to be a framework in data collection for field examination because this principle was based from problem solving in the area that was done together by the researcher and the persons who took action. Not only it was problem solving in the area, but also the generation of new knowledge.

5.2.3 Examination stage

When the researcher outlined ecological family model and examined the outlined model with experts and within the area again though implementation at the village level, the researcher opened for admission from the families to participate in activities and consulted with the families about the method and the time that was

convenient for family members to participate in activities. Moreover, the families opened an opportunity for the researcher to survey the way of lives of the families voluntarily because the families perceived benefits they would obtain from activity participation, which was environmental management for good health of family members.

5.2.3.1 Organize the stage for sharing and solving environmental problem within the area. In this stage, the researcher issued an invitation letter to family members to participate in the meeting by informing objectives of the meeting, which was to assess environmental issue of the community and find solution to environmental problem that was occurred, by specifying the meeting time to be in the evening from 18:00-20:00, which was the time that family members finished their duties in daily lives. People had dinner together and had conversation before the research assistant separated to conduct focus group from family representatives who volunteered to participate in the project. Data received during this period was the information confirming about the issue and the needs in the environment as well as an agreement to plan for mutual implementation of the families within the area at the village level. Additionally, it was the development of the relationship between the researcher and family members, which enabled the researcher to develop the plan for family survey visit in the next stage.

5.2.3.2 The families solved environmental problem within the area. After diagnosis of environmental problem and mutual planning for the implementation, the families, then, had implementation within the area. In this stage, the researcher discovered difficulties in data collection to conclude behaviors of the families because the families selected environmental problem solving through solid waste elimination in the family. Therefore, family survey visit should be done consistently and continuously through in-depth interview and participant observation in which the researcher recorded in the family profile and recorded voice in order to examine the data from many persons to confirm behaviors of family members that were actually occurred in solid waste management of the family.

5.2.3.3 Evaluate results of implementation of the family: The collected data obtained from a survey visit of the families participated in the project showed the result of failure of the implementation in the first period. There was no change occurred in the family. The researcher had to conduct a survey visit to collect more data in order to find out the cause of such results. The family showed their perception toward solid waste problem that it was the community's problem. The family had good attitudes toward the environment and illustrated the needs to participate in environmental problem solving. However, the family had incorrect knowledge in solid waste management according to academic principle.

5.2.3.4 Organize an activity for family development: When the researcher was confident that the family wanted to develop knowledge in environmental problem management of the community, then the researcher proposed the scholars to provide knowledge to family members. The families participated in the project identified date and time while the researcher was responsible for inviting a speaker to provide knowledge. Place of the meeting was sponsored by Bangsaipa Sub-district Health Center as normal. In this meeting, the families perceived its importance and sacrifice their time in the morning, which was 9.00-12.00, to listen to knowledge provided by a guest speaker. Not every family member participated in the meeting, but there was a representative from every family. When evaluating results after the meeting, participants of the meeting were satisfied to obtain knowledge in this meeting and they would adjust method of conduct of family members.

5.2.3.5 Evaluate results of implementation of the family: After the development, family members had changes in their behaviors. The researcher had a family survey visit after one month of the development activity and found distinctive changes as shown in Chapter 4.

In the stage of model examination, it illustrated that the researcher perceived importance of the field data analysis. The collected data obtained from members of each family was sometimes contradicted and required temporary conclusion and then

re-examined each issue. The researcher spent the time in this stage twice longer than what it was planned.

In this research process, the result was ecological family model in health promotion, and what beyond the researcher's expectation was a good friendship between the families participated in the project and the researcher. Each family treated the researcher as if the researcher was one of the family members. The researcher gained trust, encouragement in conducting research, mutual caring and sympathy, and more importantly the researcher approached the fact that the family was the most important fundamental institution.

CHAPTER VI
CONCLUSIONS AND RECOMMENDATIONS

The development of ecological family model in health promotion was studied with the families in the area of Bangsaipa sub-district, Banglen district, Nakornpathom province through a formative research from the study of theories, the field study, outline formation of the model, and model examination within the area. From research findings, the researcher will conclude results as follows:

6.1 Conclusions

6.2 Lessons from the research

6.3 Recommendations

6.1 Conclusions

6.1.1 Ecological family

Ecological family was the study of the relationship between the families and the environment that the families resided in. It composed of internal factor and external factor of the family. External factors were the environment that the family resided and environmental problem encountered by the family. Internal factors were the family structure, the roles possessed by family members, and the relationships of family members.

The families situated on both sides of Thachine River and worked in agricultural field. Environmental problems aced by the families were air pollution problem and solid waste problem.

The families were a nuclear family consisting of the father, the mother and the children, with number of family members at an average of 1-5 persons. The father, the mother and the children had the roles of income earning and external social

contacts. The mother had the role of food preparation. The father was responsible for making a decision on family problem. There was the good relationship within the family with mutual loving and caring.

6.1.2 Ecological family model in health promotion

Ecological family model in health promotion was the model of the relationship between the families and the environment that the families resided in, which illustrated the adaptation process of the family when coping with environmental problem and environmental management that was supportive to health. It started with family members having perception of environmental problem, good attitudes toward the environment, and participation in environmental problem solving through the roles possessed by family members in which family members were the person who made a decision on family problem, diagnosed environmental problem, consulted with the members who were responsible for income earning, food preparation and external social contacts in order to mutually plan and take action with love, care and warning without any conflict, which enabled the family to have environmental management that was supportive to health.

From the results of model examination, it was found that the family had the adaptation process when coping with environmental problem and managed the environment that was supportive to health of family members through the roles possessed by each family member. The father, the mother, and the grandmother had external social contacts role and were the person who participated in activities in the first period with an exchange of information and decision-making on solving environmental problem that was occurred, which was solid waste problem. The persons who obtained the status of the father, the mother, and the grandmother from each family demonstrated their perception toward environmental problem in the community, good attitudes toward the environment, and participation in environmental problem solving by dealing with solid wastes of each family according to their existing capacity. Result in the first period was the same condition that was previously occurred in the family before family representatives attended the meeting.

The persons who were responsible for external social contacts were the father, the mother, and the grandmother, which was confirmed by an organization of the meeting to share and provide knowledge to the family in the next meeting. The father, the mother, and the grandmother were the same family members who participated in the meeting and this time they brought back information to consult with family members.

Family members who had the role of decision-making on family problem diagnosed the problem of the family. In some families, there was a consultation with other members whereas in other families members possessed both the role of decision-making on family problem and the role of external social contacts.

Family members who were responsible for food preparation and income generation demonstrated their behavior in mutual planning, implementation, and evaluation by consulting with one another, warning, and doing activity together without any conflict.

The ecological family model in health promotion was a learning process, an adaptation process, and a development process for family members towards environmental problems. Family members cooperatively analyzed a problem, identified the method of problem solving, and each family played a role in environmental problem management that was congruent with the condition and readiness of the family.

6.1.3 The Development Process

The development process of ecological family model in health promotion consisted of:

6.1.3.1 Initial stage was the study of the relationship between the family and the environment that the family resided in through a survey research from 200 families.

6.1.3.2 Formation stage was the application of the data from the initial stage into analysis and the review of related documents, and then proposing the outline of ecological family model in health promotion.

6.1.3.3 Examination stage was the examination of the outlined model by experts and field examination through implementation at the village level with 20 families volunteered to participate in the project by:

1) Organize the stage for sharing and solving environmental problem within the area

2) The families solved environmental problem

3) Evaluate results of implementation of the family

4) Organize an activity for family development

5) Evaluate results of implementation of the family

6.2 Lessons from the research

The lessons from this research were obtained from the research process. The researcher found that:

6.2.1 To access the real community was to act like a member of that community. Building close relationship with the family was very important and necessary because family member would truly trust the researcher, not just being the researcher who collected data and left.

6.2.2 Introducing yourself to the community leader was very important. Therefore, the researcher had to introduce herself to the community leaders such as village headman, deputy village headman, and director of Sub-district Administration Organization, abbots, director of public health center and former leader of the community. It was also a chance for the researcher to gain convenience and safety of the community.

6.2.3 Activities setting in the community should be carefully studied if it was appropriate or not, for example free time of the member, which temple and what kind of activities. The meeting time should be concise and short and should be taken in the evening because it was cool. The language used should be simple and understandable.

6.2.4 Concerning the definition of environmental issues, family members who possessed secondary roles and primary roles were different in sex, age and experience. The facilitator was to encourage them to talk and exchange opinion.

6.2.5 The researcher should think that family member could solve the problems best by giving them chances to express their thoughts and emphasizing them to value what they were doing.

6.2.6 The researcher should value time to visit family. The visitation time should be punctual and also advanced inform should be done as a respect to that family because they might need privacy.

6.3 Recommendations

6.3.1 Recommendations of the Study

6.3.1.1 Perception of environmental problem, good attitudes toward the environment, knowledge in environmental problem management, and participation in environmental problem solving enables family members to manage the environment that was supportive to health. Therefore, related departments to family health promotion should support the family to perceive health problem, build good attitudes to health, provide knowledge in health care correctly to the family, and support family members to participate in health promotion.

6.3.1.2 Family member who had the role of decision-making on family problem was an influential person on other family members. In family development planning, importance should be given to family members who possessed this role.

6.3.2 Recommendations to the Study Area

6.3.2.1 From the study within the area to develop ecological family model in health promotion, it was found to have environmental problem that the family encountered. In this research process, it was unable to solve the problem of bad smell from industrial factory within the area. Related governmental departments should examine continuously and consistently for benefits of the people within the area.

6.3.2.2 From the study within the area, solid waste problem can be managed with cooperation of the families within the community. Related department which is Sub-district Administrative Organization should promote and support every family to have capacity in household solid waste management in order to prevent from solid waste problem of the community. It is a solution to solid waste problem from its genuine cause.

6.3.2.3 From the study within the area, family member who had the role of food preparation was female. If there is the needs toward health promotion in specific aspect of nutrition for the family in Bangsaipa sub-district, importance should be given to females.

6.3.3 Recommendations for Further Study

6.3.2.1 Ecological family model, the adaptation process of the family when encountered environmental problem and environmental management that was supportive to health are the new patterns of lifestyle of the family for the environment and health. Family perceives environmental problem and value of the environment, have good attitudes toward the environment, and develop knowledge that creates

change in behavior in solving environmental problem. Research findings are results of the study of the families in an agricultural context. The researcher suggested interested person to study ecological family model in health promotion with the families resided in an urban community or in other contexts that are different from the context studied by the researcher in order to compare the adaptation process of the families when encountering environmental problem and environmental management that is supportive to health.

6.3.2.2 The development process of ecological family model in health promotion should be tested by using other research methods because the researcher formed the research from a quantitative method. The next research may form the research by a qualitative method first in order to develop ecological family model in health promotion.

6.3.2.3 Since this research is a formative research, to build confidence in ecological family model in health promotion there should be the implementation and evaluation of results occurred from model implementation through research method.

BIBLIOGRAPHY

Amos, H. Hawley. (1950). Human Ecology A Theory of Community Structure. New York: Ronald Press.

Bishnu, B. Bhandari & Osamu, Abe. (2002). Environmental Education : From Idea to Action in the Asia-Pacific. International Review for Environmental Strategies,3(1),165.

Bloom, B., Hastings, T., & Madaus, G. (1971). Handbook on formative and summative evaluation of student learning. New York: McGraw-Hill.

Burgess, W. Ernest & Locke, J. (1953). The Family. New York: American Book Company.

Bubolz, M. M., & Sontag, M. S. (1993). Human Ecology Theory. Sourcebook of family theories and methods: A contextual approach. New York: Plenum Press.

Charles, M. Reigeluth. (1989). Educational technology at the crossroads: New mind sets and new directions. Educational Technology Research & Development, 37 (1), 67-80.

Charles, M. Reigeluth & Theodore, W. Frick. (1999). Formative Research: A Methodology for Creating and Improving Design Theories. [Online]. Available:http://www.indiana.edu/~syschang/decatur/documents/26formres.pdf [2008, Oct 1]

Capra, Fritjof. (1996). The Web of Life. New York: Anchor Books.

Cather, L. Gilliss. et al.(1989).Toward a Science of Family Nursing. California: Addison-Wesley Publishing.

Christie, Connard & Rebecca, Novick.(1996). The Ecology of the Family. [Online]. Available: http://www.nwrel.org/cfc/publications/ecology2.html. [2006, Jan 12]

David Cohlan & Teresa Brannick. (2001). Doing Action Research in Your Own Organization. London: Sage Publication.

David, M. Klein & Jame M.White. (1996). Family Theories : An Introduction. California: Sage Publication.

Dick, W., & Carey, L. (1990). The systematic design of instruction. Glenview, IL: Scott, Foresman.

Gerald, G Marten. (2001). Human Ecology : Basic Concepts for Sustainable Development . London: Earthscan Publications.

Green, L. W. & Kreuter M. W. (1991). Health Promotion Planning : An Educational and Environment Approach. (2nd ed.) Toronto: Mayfield Publishing.

_____. (1999). Health Promotion Planning : An Educational and Ecological Approach. (3nd ed.) Toronto: Mayfield Publishing.

Guba, E.G., & Lincoln, Y.S. (1981). Effective evaluation. San Francisco, CA: Jossey-Bass.

Kristen, C. Jacobson. & Lisa, J. Crockett. (2000). Parental Monitoring and Adolescent Adjusment: An Ecological Perspective. Journal of Research on Aldolescence, 10 (1), 65-97.

Long, B.C. & Phipps, W.J. (1985). Essentials of Medical-Surgical Nursing : A Nursing Process Approach. St.Louis: The C.V. Mosby Company.

Marilyn, M. Friedman. (1986). Family Nursing : Theory and Assessment. (2nd ed.) Connecticut: Appleton-Century-Croft.

_____.(1992). Family Nursing : Theory and Practice. (3nd ed.). Connecticut: Appleton & Lange.

Marvin, B. Sussman., Suzanne, K. Steinmetz., & Gary, W. Peterson. (1999). Handbook of Marriage and the Family (2nd ed.). New York: Plenum Press.

Morgaine, C. (2001). Family system theory. [Online]. Available: http://web.pdx.edu/-cbcm/cfs 410u / family systems theory.pdf. [2006, Jan 12]

Pender, N.J.,& Pender, A.R. (1987). Health Promotion in Nursing Practice. (2nd ed.) California: Appleton&Lange.

Paul, Coghan & David, Coghlan. (2002). Action research for operation management. International Journal of Operations & Production Management, 2 (22), 220-240. [Online].Available: http://www.emeraldinsight.com/Insight/View Content Servlet; jsessionid=2BDF2E410FD522D8B04C8CE61 F9F61A1?

Filename=Published/EmeraldFullTextArticle/Articles/0240220203.html[2008, Sep 1]

Roberts, C. S., Freetham, S. L. (1982). Assessing family functioning across three areas of relationships. Nursing Research. 31(4), 231-235.

Ronald, J. Werner - Wilson. (No Date). Human Ecology Theory. [Online]. Available:http://www.public.Iastate.edu/~hd_fs.s11/lecture/sourcebook17ppt. [2005,Jan 1].

Roy, S.C. (1979).The Adaptation Model : Comment Nursing Outlook. 24 (November). 690-691.

_____ (1984). Introduction to Nursing : An Adaptation Model. (2nd ed.). Englewood Cliffs. N.J.: Prentice-Hall.

Roy, S.C. & Andrews, H.A.(1991). The Roy Adaptation Model : The definitive statement. Connecticut: Appleton& Lange.

Thiagarajan, S., Semmel, M.I., & Semmel, D.S. (1974). Instructional development for training teachers of exceptional children: A sourcebook. Minneapolis. MN: Leadership Training Institute/Special Education, University of Minnesota.

Urie, Bronfenbrenner.(2005).Making Human Beings Human Biological Perspectives on Human Development. California: Sage Publication.

_____. (No Date). Grand Theories in Psychology. [Online]. Available: http://www.Sesklearning. gov.sk.ca/branches/psych_portal.mtp.shtml. [2008, March 22].

Vicky, C. W. Tam. (1998). Leaving children unattended at home:decision-making on the use of self-care in Hong Kong. Child and Family Social Work, 3,(1998) 125-135.

Wendi, K. Schwiger & Marion, O' Brien .(2005) Special Needs Adoption:An Ecological Systems Approach. Family Relation, 54(October), 512-522.

WHO. (1986). The Jakarta Declaration on Health Promotion into the 21st Century. [Online]. Available: http://www.who.int/hpr/NPH/docs/jakarta_declaration_en.pdf. [2008, Jan 22].

Worthen, B., & Sanders, J. (1987). Educational evaluation: Alternative approaches and practical guidelines. New York: Longman.

Yin, R.K. (1984). Case study research design and methods. California: Sage Publications.

กนกวรรณ สุวรรณปฏิกรณ์. (2544). มาตรวัดพฤติกรรมการส่งเสริมสุขภาพของครอบครัว:การพัฒนาและการวิเคราะห์.วิทยานิพนธ์ปริญญาสาธารณสุขศาสตร์ดุษฎีบัณฑิต (การพยาบาลสาธารณสุข) .บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.

กระทรวงการต่างประเทศ.(2537). แผนปฏิบัติการ 21 เพื่อการพัฒนาอย่างยั่งยืน. กรุงเทพฯ: อมรินทร์พริ้นติ้ง แอนด์ พับลิชชิ่ง.

กรมส่งเสริมคุณภาพสิ่งแวดล้อม .(2541).ทรัพยากรธรรมชาติและสิ่งแวดล้อม.กรุงเทพฯ: ฝ่ายพัฒนาและผลิตสื่อกองส่งเสริมและเผยแพร่ กรมส่งเสริมคุณภาพสิ่งแวดล้อม กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม.

กุศล สุนทรดารา และคณะ.(2542). สถานการณ์และองค์ความรู้เกี่ยวกับการเลี้ยงดูเด็กในประเทศไทย.สถาบันวิจัยประชากรและสังคม.มหาวิทยาลัยมหิดล

ชูชัย ศุภวงศ์.(2542).สถานการณ์สุขภาพและอนามัยสิ่งแวดล้อมในประเทศไทยจากอดีตถึงปัจจุบัน. โครงการตำรา สำนักที่ปรึกษา กรมอนามัย กระทรวงสาธารณสุข.

ธวัชชัย บุญโชติ . (ม.ป.ป.). เอกสารคำสอนวิชามนุษย์นิเวศวิทยา หลักสูตรสังคมศาสตรมหาบัณฑิต สาขาสิ่งแวดล้อม คณะสังคมศาสตร์และมนุษยศาสตร์ มหาวิทยาลัยมหิดล.

บุญธรรม กิจปรีดาบริสุทธิ์. (2535). การวัดและการประเมินผลการเรียนการสอน. กรุงเทพฯ: B&B Publishing.

ผจงจิตต์ พิทักษ์ภากร.(2543). ปัจจัยที่มีอิทธิพลต่อความเป็นปึกแผ่นของครอบครัวไทย. วิทยานิพนธ์ปริญญาศึกษาศาสตรดุษฎีบัณฑิต, สาขาวิชาประชากรศึกษา บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.

ผ่องพรรณ ตรัยมงคลกูล และ สุภาพ ฉัตราภรณ์.(2545). การออกแบบการวิจัย. (พิมพ์ครั้งที่ 4). กรุงเทพฯ: มหาวิทยาลัยเกษตรศาสตร์.

มนทิรา โลหพันธุ์วงศ์ . (2546) . คู่มือการดำเนินการส่งเสริมสุขภาพในโรงเรียน.กรุงเทพฯ:โรงพิมพ์การศาสนา กรมการศาสนา.

ยุวดี คาดการณ์ไกล.(2542).สุขภาพและสิ่งแวดล้อมกับการพัฒนาอย่างยั่งยืน. โครงการตำรา สำนักที่ปรึกษา กรมอนามัย กระทรวงสาธารณสุข.

รุจา ภู่ไพบูลย์. (2547). การสร้างเสริมสุขภาพวัยรุ่นแบบมีส่วนร่วม.กรุงเทพฯ: โนเบิ้ล.

รุจา ภู่ไพบูลย์. (2534). การพยาบาลครอบครัว : แนวคิดทฤษฎีและการนำไปใช้. ขอนแก่น: มหาวิทยาลัยขอนแก่น.

สถาบันวิจัยระบบสุขภาพ.(2541). นิยามศัพท์ส่งเสริมสุขภาพ. กรุงเทพฯ: ดีไซด์

สถาบันแห่งชาติเพื่อการพัฒนาเด็กและครอบครัว มหาวิทยาลัยมหิดล. (2545). รายงานการศึกษาขั้นสุดท้าย โครงการศึกษาเพื่อพัฒนาตัวชี้วัด “ครอบครัวอยู่ดีมีสุข”.CD ROM

สำนักงานกิจการสตรีและสถาบันครอบครัว.(2551).โครงการบริหารจัดการข้อมูลสารสนเทศด้านสตรีและครอบครัว. [Online]. Available: http//:www. thaifamily.in.th/ index.php. (2008, March 2).

สำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อม กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม.(2548).รายงานสถานการณ์คุณภาพสิ่งแวดล้อม พ.ศ.2547 . กรุงเทพฯ: อมรินทร์พริ้นติ้งแอนด์พับลิชชิ่ง.

สำนักงานสถิติแห่งชาติ.(2550). รายงานสถิติรายปีประจำปีประเทศไทย พ.ศ. 2550 (ฉบับพิเศษ). [CD -ROM].

สมจิต หนุเจริญกุลและคณะ . (2543). การส่งเสริมสุขภาพ แนวคิด ทฤษฎีและการปฏิบัติการพยาบาล. นครศรีธรรมราช: มหาวิทยาลัยวลัยลักษณ์.

สมพร เทพสิทธา.(2538). ครอบครัวไทยในยุคโลกาภิวัฒน์. กรุงเทพฯ: สภาสังคมสงเคราะห์แห่งประเทศไทยในพระบรมราชูปถัมภ์.

สุวิทย์ วิบุลผลประเสริฐ. (2548). การสาธารณสุขไทย พ.ศ.2544 - 2547. [Online]. Available: http://www.moph.go.th/ops/health_48 [2005, Jan 8]

สุภางค์ จันทวานิช. (2545). วิธีการวิจัยเชิงคุณภาพ. (พิมพ์ครั้งที่10). กรุงเทพฯ: จุฬาลงกรณ์มหาวิทยาลัย.

_____ (2546).การวิเคราะห์ข้อมูลในการวิจัยเชิงคุณภาพ. (พิมพ์ครั้งที่5). กรุงเทพฯ: จุฬาลงกรณ์มหาวิทยาลัย.

โสภา ชปีลมีนท์.(2536). ครอบครัว : พื้นฐานปัญหาสังคมที่น่าเป็นห่วงในปัจจุบัน. กรุงเทพฯ: สมชายการพิมพ์

องค์การอนามัยโลก.(2541) คำประกาศจาการ์ตา เรื่องการส่งเสริมสุขภาพในศตวรรษที่ 21 (ลักขณา เติมศิริกุลชัยและสุชาดา ตั้งทางธรรม ,ผู้แปล.) กรุงเทพฯ: ดีไซด์

อัจฉรา นวจินดา. (2535) . ครอบครัวกับคุณภาพชีวิต. วารสารประชากรศาสตร์ ,8(2) .สถาบันประชากรศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

อภิชัย พันธเสนและดวงมณี เลาวกุล. (2537). คุณภาพชีวิตคนไทยในคริสต์ศตวรรษหน้า: เศรษฐกิจไทย ค.ศ.2000. มหาวิทยาลัยธรรมศาสตร์.

APPENDIX

APPENDIX A

SURVEY QUESTIONAIRE FOR CURRENT CONDITIONS,PROBLEMS AND THE NEEDS OF THE FAMILIES IN RELATION TO HEALTH AND ENVIRONMENT

No. …….

Contextual study and the study of problem conditions, and needs of family in the environment

Instruction: This questionnaire is developed to survey problem conditions, and needs of family in the environment of Thai families. As you are an important family member, please give the correct answers about your family in the following items:

Section 1 General Information

1. Your status in the family
   O Father O Mother O Daughter O Son
   O Others (Please specify).....

2. Number of family members.....Consisting of
   O Father age..... years O Mother age..... years
   O Children number.....persons, age.....years (Please specify)
   O Others (Please specify).....

3. Your occupation
   O Government/state enterprise employee O Merchant O Employee
   O Housewife O Farmer O Animal Husbandry.....
   O Others (Please specify).....

4. Your highest education
   O Primary school O Secondary school O Certificate
   O Undergraduate degree O Others (Please specify).....

5. Your monthly family income
   O less than 5,000 baht O 5,001 – 10,000 baht O 10,001 - 15,000 baht
   O 15,001-20,000 baht O 20,001-25,000 baht O 25,001-30,000 baht
   O more than 30,000 baht

6. Type of your residence
   O Detached house O Townhouse O Room
   O Others (Please specify).....

7. The owner of residence
   O Self O Rented O Relatives
   O Others (Please specify).....

Section 2 Role of the Family Members

Role **Role Player**

Income Earning .....
.....

Food Preparation .....
.....

Decision-Making on Family Problems
.....
.....

External Social Contact
(contact with organizations in community for both internal and external ,contact with the relatives when there were religious affairs or other ceremonies)
.....
.....

Section 3 Current conditions, Problems and needs of family

Instruction: Please read each statement and put "√" sign in the space with you mostly agree with about your family.

No	Statement	Highest	High	Moderate	Low	Lowest
1	Deterioration of natural resources has an impact on your health and on family members' health					
2	Waste water problem has an impact on your health and on family members' health					
3	Air pollution problem has an impact on your health and on family members' health					
4	Noise pollution problem has an impact on your health and on family members' health					
5	Solid waste problem has an impact on your health and on family members' health					

No	Statement	Highest	High	Moderate	Low	Lowest
6	Garbage problem has an impact on your health and on family members' health					
7	Environmental condition within and around the house is important for sustenance					
8	Family members have conversation about natural resources and environment					
9	Family members give importance to natural resource and environmental conservation					
10	Family members think that our house should be in good environment					
11	Family members are satisfied with the environment that the family is residing in					
12	There are environmental problems around residential area of the family					
13	Your family lives by considering income more than environment					
14	You think that your family will have good quality of life if living in better environment					
15	You think if we cooperatively look after the environment, the Thai society will become happier					
16	You think that forest areas of Thailand decline comparing to the past					
17	You think that the environment nowadays is deteriorated					
18	If you have an opportunity, you would like to participate in every environmental conservation project					
19	Your family gives importance to the environment					
20	Family members arrange better surroundings within and around the house					

No	Statement	Highest	High	Moderate	Low	Lowest
21	Family members search for foods that promote health, for examples, using hydroponics and medicinal plants in cooking for the family					
22	Your family has clean water for drinking and usage					
23	Your family has waste segregation prior to dumping or elimination					
24	Your family has defecation in the toilet in order to protect from contamination of diseases attached to stools					
25	Family members use water economically					
26	Your family recycles and reuses materials					
27	Your family uses correct method of hazardous waste management					
28	Your family grows medicinal plants for application when encounter illness					
29	Your family has chemical free environment					
30	Your family has prevention from accidents					
31	Your family participates in environmental conservation activities					
32	Members in your family do not keep electricity on					
33	When there are garbage and refuse, you will separate garbage from refuse prior to dumping					
34	Members in your family take part in expressing opinion about environmental problems within community					
35	Members in your family take part in decision-making on identifying which environmental problems are problems of community					
36	Members in your family persuade members of the other families to participate in environmental activities					

Section 4

1. In your opinion, how do environmental conditions within and around your house affect the health of family members?

. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .

2. In your opinion, which environmental problems that should be solved and why?

. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .

แบบสำรวจ

สภาพปัจจุบัน ปัญหาและความต้องการของครอบครัวเกี่ยวกับสุขภาพและสิ่งแวดล้อม

คำชี้แจง แบบสอบถามฉบับนี้เป็นแบบสอบถามที่จัดทำขึ้นเพื่อสำรวจสภาพปัจจุบัน ปัญหาและความต้องการทางสุขภาพและสิ่งแวดล้อมของครอบครัวไทย ในฐานะที่ท่านเป็นสมาชิกคนหนึ่งที่มีความสำคัญอย่างยิ่งต่อครอบครัว โปรดให้คำตอบที่ตรงกับสิ่งที่ครอบครัวของท่านกระทำอยู่ให้มากที่สุด

ตอนที่ 1 ข้อมูลทั่วไป

8. สถานภาพของท่านในครอบครัวคือ

   O พ่อ O แม่ O ลูกชาย O ลูกสาว O อื่นๆเป็น.....

9. จำนวนสมาชิกในครอบครัว.....คน ประกอบด้วยสมาชิกที่เป็น

   O พ่อ อายุ.....ปี O แม่ อายุ.....ปี

   O ลูก จำนวน.....คนอายุ.....ปี (โปรดระบุทุกคน)

   O อื่นๆ โปรดระบุความเกี่ยวข้อง.....อายุ.....ปี

10. อาชีพของท่าน

    O รับราชการ O ค้าขาย O พนักงานรัฐวิสาหกิจ O รับจ้าง

    O แม่บ้าน O ทำนา O เลี้ยงสัตว์ ระบุ..... O อื่นๆ ระบุ.....

11. การศึกษาสูงสุดของท่าน

    O ระดับประถมศึกษา O ระดับมัธยมศึกษา O ระดับประกาศนียบัตร

    O ระดับปริญญาตรี O อื่นๆ ระบุ.....

12. รายได้ของครอบครัวต่อเดือน

    O น้อยกว่า5,000 บาท O 5,001 – 10,000 บาท O 10,001 - 15,000 บาท

    O 15,001-20,000 บาท O 20,001-25,000 บาท O 25,001-30,000 บาท

    O มากกว่า30,000 บาท

13. ลักษณะที่อยู่อาศัยของครอบครัวในปัจจุบัน

    O บ้านเดี่ยว O ทาวเฮ้าส์หรือบ้านแฝด O ห้องแบ่งเช่า

    O อื่นๆ ระบุ.....

14. ลักษณะการครอบครองที่อยู่อาศัยของครอบครัวในปัจจุบัน

    O เป็นของตนเอง O เช่า O อาศัยอยู่กับญาติ O อื่นๆ ระบุ.....

ตอนที่ 2 บทบาทของสมาชิกในครอบครัว

บทบาท	**ผู้แสดงบทบาท**
ใครเป็นผู้หารายได้เข้าครอบครัว	.....
	.....
	.....
	.....
ใครเป็นผู้จัดเตรียมอาหารสำหรับครอบครัว	.....
	.....
	.....
	.....
ใครเป็นคนตัดสินใจเกี่ยวกับปัญหาครอบครัว	.....
	.....
	.....
	.....
ใครเป็นคนติดต่อทางสังคมภายนอก	.....
(ติดต่อหน่วยงานต่างๆ ภายในและภายนอกชุมชน	.....
ติดต่อเครือญาติหรือเพื่อนบ้าน	.....
เมื่อมีงานบุญหรืองานพิธีต่างๆ)	.....

ตอนที่ 3 สภาพปัจจุบัน ปัญหาและความต้องการของครอบครัว

คำชี้แจง โปรดอ่านข้อความแต่ละข้อแล้วใส่เครื่องหมาย √ ลงในช่องคำตอบที่ท่านเห็นว่าตรงกับครอบครัวของท่านมากที่สุด

ลำดับ	ข้อความ	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
1	ความเสื่อมโทรมของทรัพยากรธรรมชาติส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
2	ปัญหาน้ำเสียส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
3	ปัญหาอากาศเสียส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
4	ปัญหาเสียงดังส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
5	ปัญหามูลฝอยส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
6	ปัญหาสิ่งปฏิกูลส่งผลกระทบต่อสุขภาพของท่านและสมาชิกครอบครัว					
7	สภาพสิ่งแวดล้อมในบ้านและบริเวณเป็นสิ่งสำคัญสำหรับการดำรงชีวิต					
8	สมาชิกในครอบครัวมีการพูดคุยกันเรื่องทรัพยากรธรรมชาติและสิ่งแวดล้อม					
9	สมาชิกในครอบครัวให้ความสำคัญกับการอนุรักษ์ทรัพยากรธรรมชาติและสิ่งแวดล้อม					
10	สมาชิกในครอบครัวคิดว่าบ้านของเราควรอยู่ในสิ่งแวดล้อมที่ดี					
11	สมาชิกในครอบครัวพอใจกับสภาพสิ่งแวดล้อมที่ครอบครัวอยู่					
12	ในบริเวณที่ครอบครัวอาศัยอยู่มีปัญหาสิ่งแวดล้อม					

ลำดับ	ข้อความ	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
13	ครอบครัวของท่านดำรงชีวิตโดยคำนึงถึงรายได้มากกว่าสภาพแวดล้อม					
14	ท่านคิดว่าครอบครัวของท่านจะมีคุณภาพชีวิตที่ดีถ้าอยู่ในสิ่งแวดล้อมที่ดีกว่านี้					
15	ท่านคิดว่าถ้าเราร่วมกันดูแลสิ่งแวดล้อมสังคมไทยจะมีความสุขกว่านี้					
16	ท่านคิดว่าพื้นที่ป่าไม้ของประเทศไทยลดลงกว่าเมื่อก่อน					
17	ท่านคิดว่าปัจจุบันสิ่งแวดล้อมเสื่อมโทรม					
18	ถ้าท่านมีโอกาสท่านอยากร่วมโครงการอนุรักษ์สิ่งแวดล้อมทุกโครงการ					
19	ครอบครัวของท่านให้ความสำคัญกับสิ่งแวดล้อม					
20	สมาชิกในครอบครัวมีการจัดสภาพแวดล้อมในบ้านและบริเวณบ้านให้ดีขึ้น					
21	สมาชิกในครอบครัวหาอาหารที่ส่งเสริมสุขภาพ เช่น ผักปลอดสารพิษ พืชสมุนไพร มาประกอบอาหารให้ครอบครัว					
22	ครอบครัวของท่านมีน้ำสะอาดสำหรับดื่มและใช้					
23	ครอบครัวของท่านมีการคัดแยกขยะก่อนที่จะนำไปทิ้งหรือกำจัด					
24	ครอบครัวของท่านมีการถ่ายอุจาระลงในส้วมเพราะช่วยป้องกันเชื้อโรคที่ปนมากับอุจาระ					
25	สมาชิกในครอบครัวมีการใช้น้ำอย่างประหยัด					
26	ครอบครัวของท่านมีการนำสิ่งของใช้แล้วกลับมาใช้ใหม่					
27	ครอบครัวของท่านมีการกำจัดของเสียอันตรายที่ถูกต้อง					

ลำดับ	ข้อความ	มากที่สุด	มาก	ปานกลาง	น้อย	น้อยที่สุด
28	ครอบครัวของท่านมีการปลูกสมุนไพรไว้ใช้รักษายามเจ็บป่วย					
29	ครอบครัวของท่านมีสิ่งแวดล้อมที่ปลอดจากสารเคมี					
30	ครอบครัวของท่านมีการป้องกันอุบัติภัย					
31	ครอบครัวของท่านเข้าร่วมกิจกรรมที่รักษาสิ่งแวดล้อม					
32	สมาชิกในครอบครัวของท่านเปิดไฟฟ้าทิ้งไว้					
33	เมื่อมีขยะเปียกและขยะแห้งท่านจะแยกขยะเปียกและขยะแห้งออกจากกันก่อนทิ้งลงในถังขยะ					
34	สมาชิกในครอบครัวของท่านมีส่วนในการแสดงความคิดเห็นเกี่ยวกับปัญหาสิ่งแวดล้อมในชุมชน					
35	สมาชิกในครอบครัวของท่านมีส่วนในการตัดสินใจในการกำหนดว่าปัญหาสิ่งแวดล้อมใดเป็นปัญหาของชุมชน					
36	สมาชิกในครอบครัวของท่านชักชวนสมาชิกในครอบครัวคนอื่นเข้าร่วมกิจกรรมด้านสิ่งแวดล้อม					

ตอนที่ 4

1. ท่านคิดว่าสภาพสิ่งแวดล้อมในบ้านและบริเวณบ้านของท่านส่งผลต่อสุขภาพของสมาชิกครอบครัวอย่างไร

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2. ท่านคิดว่าปัญหาสิ่งแวดล้อมที่ควรปรับปรุงคือปัญหาอะไร เพราะอะไร

……

……

……

……

……

……

……

……

APPENDIX B
THE FAMILY FOLDER

Family Profile

Head of Family.....

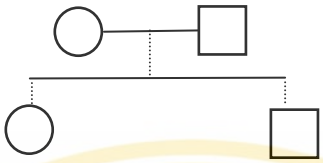
Home Address.....

Home Map

Number of family members …….. persons

No.	Name-Surname	Relationship	Gender	Age	Education	Occupation	Monthly income	Health Condition	Note
1									
2									
3									
4									
5									
6									
7									

Family Structure



General Information

1. Residential characteristics
2. Sources of clean water for drinking and household consumption
3. Water for usage and containers
4. Waste water management
5. Waste management
6. Toilet usage
7. Animals and insects that are the carrier and method of eradication
8. Number of pets

Roles and Relationships

9. Role of looking after family's wellbeing
10. Role of housekeeping and food preparation
11. Role of making contacts with relatives when there is a ceremony and an event
12. Role of external contacts with different departments both inside and outside the community
13. Elderly had the role in the family
14. Children had the role in the family
15. Decision maker on financial spending and savings
16. Decision maker on household expenditures
17. Decision maker on occupation of the family

    Decision maker on the period of work and type of work as well as plantation

    Decision maker on the customer and place for selling products

    Decision maker on the person who would work outside the family
18. Who is the health of family and why?
19. Who is given respect and obeyed the most by family members?

20. Who work the hardest and why?
21. Which is an important source of income in the past and at present?
22. What are important expenditures in the past and at present?
23. Is there any money savings?
24. What is the source of (agricultural) products distribution of the family?
25. Are there any sick persons? Who look after them when they are ill?
26. Which is an important source of foods?
27. What are the sources of household equipments and utensils?
28. Who teaches the children?
29. Which family problem worries you and the family the most? Why?
30. When conflict occurs, how do family members deal with problem?
31. How is the relationship with relatives? How do they help one another?
32. There are compliments given when family members behave in what ways?
33. There are warnings and punishments given when family members behave in what ways?
34. Anyone in your family smokes cigarettes, is alcoholic or addicted to addictive substances?
35. Anyone in your family is addicted to gambling?
36. Is there any physical abuse when there is a quarrel?
37. Does the family support members to participate in an activity? How?
38. Is our house already in a good environment?
39. What does it mean by “good environment”?
40. Why our family should be in a good environment?
41. What is environmental problem in our community?

Environmental Problem Management

Father……
……
Mother……
……

Children……
……..……
Other members in the family
……...……
……

Summary of family's behaviors

Topic	Date of visit	Status	Activity	Behavior	Relationship
Waste segregation					
Waste storage					
Waste elimination					
Others					

แฟ้มครอบครัว

หัวหน้าครอบครัว.....

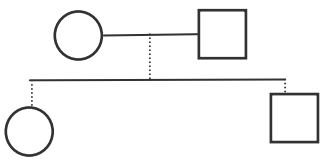
บ้านเลขที่..... .....

แผนที่บ้าน

สมาชิกในครอบครัวมีจำนวน คน

ลำดับที่	ชื่อ-นามสกุล	ความเกี่ยวข้อง	เพศ	อายุ	การศึกษา	อาชีพ	รายได้ต่อเดือน	ภาวะสุขภาพ	หมายเหตุ
1									
2									
3									
4									
5									
6									
7									

โครงสร้างครอบครัว



ข้อมูลทั่วไป

1. ลักษณะที่อยู่อาศัย
2. น้ำสะอาดสำหรับดื่มและบริโภคในครัวเรือนได้มาจาก
3. น้ำใช้และภาชนะบรรจุ
4. การกำจัดน้ำโสโครก
5. การกำจัดขยะ
6. การใช้ส้วม
7. สัตว์และแมลงนำโรคและวิธีการกำจัด
8. จำนวนสัตว์เลี้ยง

บทบาทและความสัมพันธ์

9. บทบาทในการหาเลี้ยงครอบครัว
10. บทบาทเกี่ยวกับภาระงานบ้านและการเตรียมอาหาร
11. บทบาทเกี่ยวกับการติดต่อกับเครือญาติเมื่อมีงานบุญหรืองานพิธีต่างๆ
12. บทบาทเกี่ยวกับการติดต่อกับหน่วยงานต่างๆทั้งภายในและภายนอกชุมชน
13. ผู้สูงอายุมีบทบาทในครอบครัว
14. ลูกมีบทบาทในครอบครัว
15. ผู้ตัดสินใจเกี่ยวกับการใช้เงิน การเก็บรักษาเงิน
16. ผู้ตัดสินใจเกี่ยวกับการซื้อของใช้ภายในบ้าน
17. ผู้ตัดสินใจเกี่ยวกับการประกอบอาชีพของครอบครัว
    คนตัดสินใจว่าช่วงไหนจะทำงานอะไร จะเพาะปลูกอะไร
    คนตัดสินใจว่าจะเอาผลผลิตไปขายกับใครที่ไหน
    คนตัดสินใจว่าใครจะเป็นผู้ออกไปทำงานนอกครอบครัว
18. ใครเป็นหัวหน้าครอบครัว เพราะเหตุใด
19. ใครที่สมาชิกในครอบครัวให้ความเคารพและเชื่อฟังมากที่สุด
20. ใครทำงานหนักที่สุด เพราะเหตุใด
21. แหล่งรายได้ที่สำคัญในอดีตและปัจจุบันมาจากแหล่งใดบ้าง
22. ค่าใช้จ่ายที่สำคัญในอดีตและปัจจุบันมีอะไรบ้าง
23. มีเงินออมหรือไม่
24. แหล่งจำหน่ายสินค้า(ทางการเกษตร)ของครอบครัวคือแหล่งใด

25. มีคนบ้านเจ็บป่วยหรือไม่ ใครดูแลพยาบาลเมื่อเจ็บป่วย
26. แหล่งอาหารที่สำคัญของครอบครัวได้มาจากแหล่งใด
27. ข้าวของเครื่องใช้ต่างๆภายในครอบครัวได้มาจากแหล่งใด
28. ใครอบรมสั่งสอนลูก
29. ปัญหาในครอบครัวเรื่องใดที่สร้างความลำบากให้กับท่านและครอบครัวมากที่สุด เพราะเหตุใด
30. เมื่อมีความขัดแย้งเกิดขึ้นในครอบครัว สมาชิกในครอบครัวจัดการกับปัญหาอย่างไร
31. ความสัมพันธ์ระหว่างครอบครัวกับญาติพี่น้องเป็นอย่างไร มีการช่วยเหลือกันอย่างไรบ้าง
32. มีการชมเชยเมื่อสมาชิกทำอะไรบ้าง
33. มีการตักเตือน ทำโทษ เมื่อสมาชิกทำอะไรบ้าง
34. มีใครสูบบุหรี่ ติดสุราและสารเสพติดหรือไม่
35. มีใครติดการพนันหรือไม่
36. มีการใช้กำลังทำร้ายร่างกายเวลาทะเลาะวิวาทกันหรือไม่
37. ครอบครัวสนับสนุนให้สมาชิกเข้าร่วมกิจกรรมส่วนรวมหรือไม่ อย่างไร
38. บ้านของเราอยู่ในสิ่งแวดล้อมที่ดีหรือยัง
39. คำว่า “สิ่งแวดล้อมที่ดี” หมายถึงอะไร
40. ทำไมครอบครัวของเราจึงควรอยู่ในสิ่งแวดล้อมที่ดี
41. ปัญหาสิ่งแวดล้อมในชุมชนของเราคือปัญหาอะไร

การจัดการปัญหาสิ่งแวดล้อม

พ่อ……
……..
แม่……
……
ลูก……
……
คนอื่นๆในบ้าน ……
……
……

แบบสรุปพฤติกรรมครอบครัว

เรื่อง	วันที่เยี่ยม	สถานภาพ	กิจกรรม	พฤติกรรม	ความสัมพันธ์
การคัดแยกขยะ					
การจัดเก็บขยะ					
การกำจัดขยะ					
อื่นๆ					

APPENDIX C
THE POWER POINT OF EXPLANATIVE HOUSEHOLD-WASTE MANAGEMENT

1

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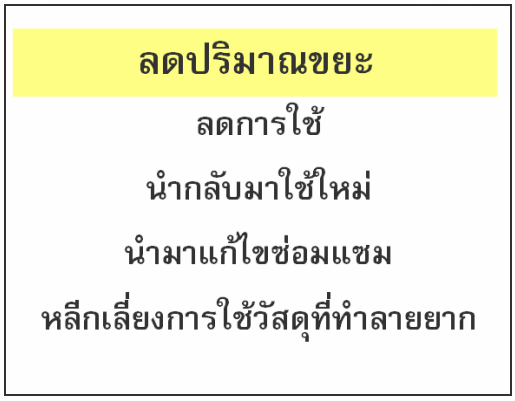

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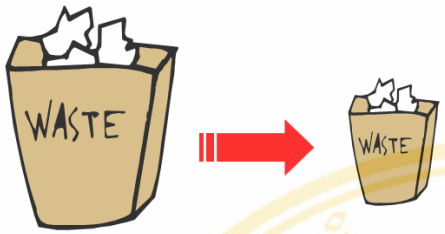
นำกลับมาใช้ใหม่



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นำมาแก้ไขซ่อมแซม

8

หลีกเลี่ยงการใช้วัสดุที่ทำลายยาก

โฟม ไม่ย่อยสลาย
กระป๋องดีบุก 1,000 ปี
กระป๋องอลูมิเนียม 200 - 500 ปี
ถุงพลาสติก 450 ปี
ก้นบุหรี่ 12 ปี
กระดาษ 2 - 5 เดือน
ผ้าฝ้าย 1 - 5 เดือน

โฟม

9

การกำจัดขยะ

- การนำขยะไปหมักทำปุ๋ย
- การนำขยะไปเทกองกลางแจ้ง หรือการนำขยะไปทิ้งไว้ตามธรรมชาติ
- การเผาด้วยความร้อนสูง หรือการกำจัดโดยใช้เตาเผา หรือการสร้างโรงงานเผาขยะ

10

การกำจัดขยะ

- การฝังกลบอย่างถูกสุขอนามัยหรือถูกหลักสุขาภิบาล
- การนำขยะไปทิ้งทะเล
- การนำขยะกลับไปใช้ประโยชน์ใหม่
- การนำขยะไปเป็นอาหารสัตว์

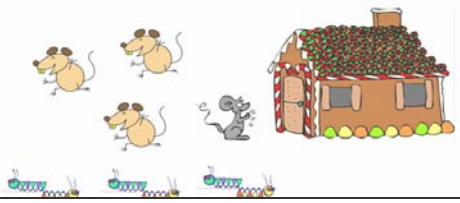
11

การกำจัดขยะมูลฝอยที่ถูกสุขลักษณะ

ไม่ก่อให้เกิดผลกระทบ
เสียหายต่อการดำรงชีวิตอย่างปกติสุข

12

ไม่ก่อให้เกิดแหล่งเพาะพันธุ์
สัตว์หรือแมลงที่เป็นพาหะนำโรค



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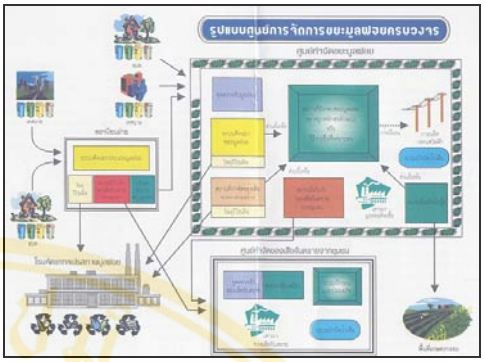

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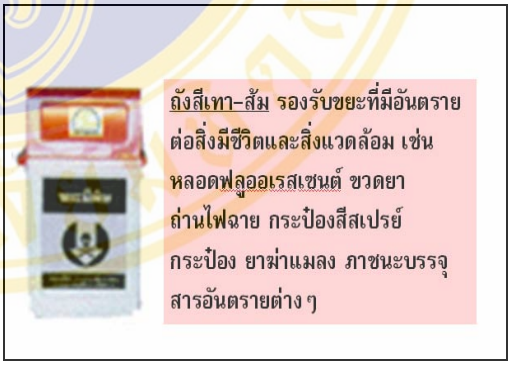

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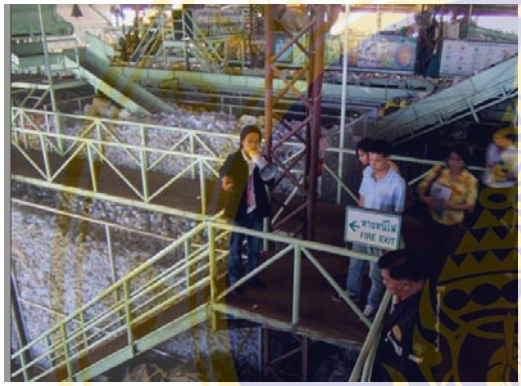

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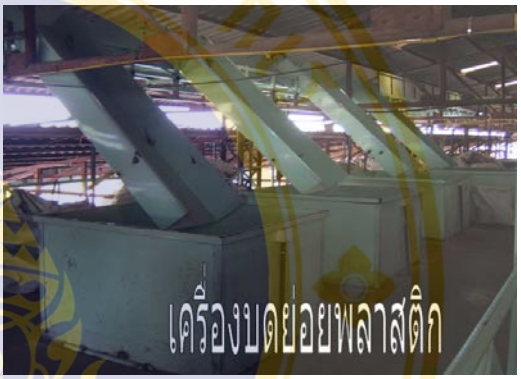

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BIOGRAPHY

NAME	Supaporn Songpracha
DATE OF BIRTH	6 November 1970
PLACE OF BIRTH	Samutsakorn, Thailand
INSTITUTIONS ATTENDED	Boromarajonani College of Nursing Ratchaburi, 1993: Diploma in Nursing Science Equivalent to Bachelor of Science in Nursing Mahidol University, 2002: Master of Arts (Environment) Mahidol University, 2008: Doctor of Education (Environmental Education)
FELLOWSHIP	Teacher assistant, Faculty of Graduate Studies, Mahidol University, 2005
RESEARCH GRANTS	King Prajadhipok and Queen Rambhai Barni Memorial Foundation, 2006 Strategic Scholarships Fellowships Frontier Research Networks, 2007 Banglen Project, Department of Education, Faculty of Social science and humanities, Mahidol University, 2006-2007