CHAPTER II

ESSAY

The essay can be divided into five parts. First, it is about "How the health education program can reduce the rate of acute diarrhea morbidity." The second is about "How the diarrhea education program can promote behavioral change for acute diarrhea prevention and self-care." The third talks about "The results after implementation of many routine diarrhea education programs; Success or failure and why ?". The fourth is about the new 1998 Chon Buri provincial diarrhea education program and how it is different from the routine ones; What happened after its implementation. Finally, "Why PAR was chosen as an alternative strategy in my proposal".

2.1 How the Health Education Program Can Reduce the Rate of Acute Diarrhea Morbidty

Dalis (1994) pointed out that much of learning happens when someone, who knows something, passes that knowledge to someone who did not know, be it's parents, other family members, peers, or teachers; but, if changes did not occur in teaching and learning, all other changes had little value. He also reminded us that effective instruction hinges on two issues-what to teach and how to teach it. He said :

With considering what and how to teach, we need to continue to remind ourselves that the central thrust of health instruction must be promoting health enhancing behaviors and diminishing or extinguishing health compromising behaviors within the context of a democratic society.

Ratnaike and Chinner (1994) provided a summary of their research which made it abundantly clear that health education, either alone or in conjunction with other types of programs to manage diarrhea, was essential and ultimately could be more effective in reducing the prevalence and morbidity of diarrheal diseases than other programs used singularly.

Klepp, Knut-Inge, et al. (1994) pointed out in their research, on the School Based Program, AIDS Education for Primary School Children in Tanzania : an Evaluation Study, that HIV/AIDS education for sixth and seventh grades (average age, 14.0 years) could foster increased knowledge about and communication regarding HIV/AIDS. The program appears to have succeeded in making AIDS a topic of discussion outside, as well as in, the school setting. This was because pupils more frequently discussed AIDS with their parents, other relatives, and religious leaders following the intervention. Therefore, the researchers suggested that a health education program might increase the community's awareness of HIV/AIDS. Thus, a diarrhea education program will be used to promote awareness of diarrhea and a reduction in the acute diarrhea morbidity rate.

2.2 How the Diarrhea Education Program Can Promote Behavioral Change for Acute Diarrhea Prevention and Self-Care.

In agreement with Dalis (1994), the central thrust of health instruction must promote health enhancing behaviors and diminish or eliminate health compromising behaviors within the context of a democratic society. From the theoretical view point of Richmond and Kotelchuck (1991), health promotion or preventive services delivered by health care providers should promote a healthier environment and lifestyle (Atwood, et. al.,1997) which was expressed as Richmond and Kotelchuck's health policy model (see Figure 1.2).

The first component of Richmond and Kotelchuck's model is knowledge_base, defined as a scientific and administrative data base upon which to make decisions. The second component is political will, defined as society's desire and commitment to develop and fund new programs or to support or modify existing programs. The final component is social strategy which has been defined as the plan by which the knowledge base and political will to improve or initiate programs is applied (Atwood, et al., 1997).

Kotelchuck's model mentioned above and Dalis' concept of effective health instruction have been applied to the second issue "How the diarrhea education program can promote behavioral change for diarrhea prevention and self-care", as a modified model shown in Figure 2.2.1.

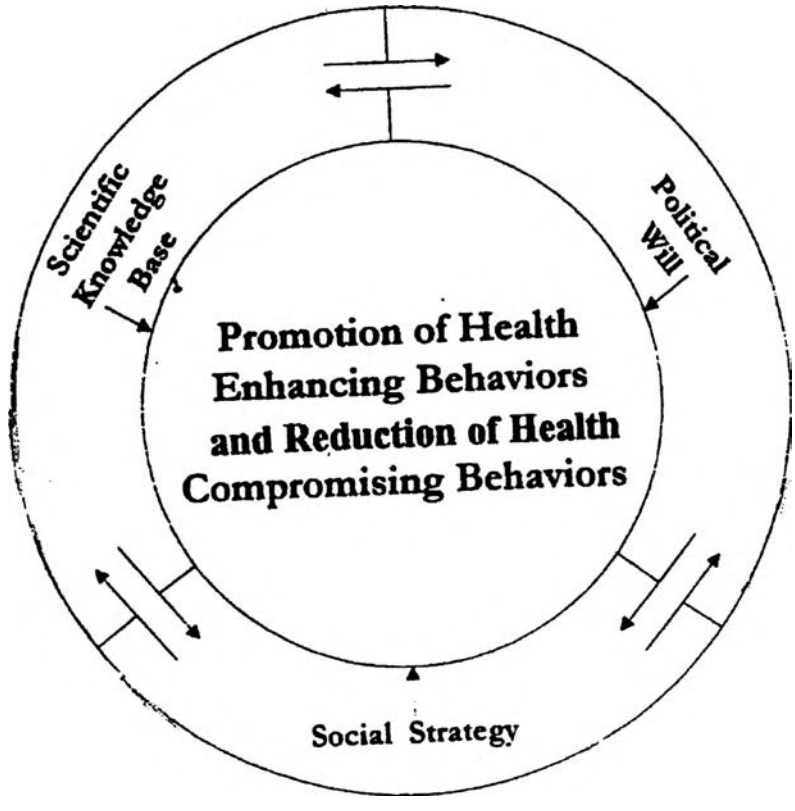
Atwood (1997) also said that the health education or diarrhea education program would be designed to instruct knowledge which was appropriate to people's

lifestyle with easy-to-understand language and suitable for each target group to practice. One possible way to transmit such knowledge is to build political will which depends on both supply side factors (what influences the decisions of politicians and legislators, or health administrators, health providers, or health educators on which product and health service to use) and demand side factors (the participation of citizens in political activities or the requirements of patients or health-service consumers).

However, it seems that the health service system in Thailand is a monopolistic market (Phelps, 1992) having only sellers (health providers) who may represent good *supply side*, and a lack of participation by people representing *demand side*; this will lead to the failure of political will.

Thus, grass-roots action (Atwood, et al., 1997) or participatory action research (Smith, Pyrch and Lizardi, 1993) is one mechanism or social strategy by which politically active citizens have generated political will and share a value base with people-centered development which acknowledges the validity and importance of people's knowledge, and works to build competence and health in individuals and communities. This leads to a human awareness of healthier environment and lifestyle based on structural interventions implemented by governmental, non-governmental and local activities to produce effective preventive action aimed at promoting health enhancing behaviors (acute diarrhea prevention and self-care behaviors) and reducing health compromising behaviors.

Figure 2.2.1 Adapted from Richmond and Kotelchuck's health policy model.



2.3 The Results after Implementation of Many Routine Diarrhea Education Programs; Success or Failure and Why ?

The increasing acute diarrhea morbidity rate in Chonburi during 1991-1997, which rose from approximately 1,900 cases (in 1991) and about 2,000 (in 1994) per 100,000 population (see Table 1.1 and Figure 1.1), is double the national target which is not greater than 1,000/100,000 population (in all age groups) and has not been reduced to less than 2,000 until now. Thus, it is an important problem public health experts need to solve. Many questions have arisen since January 1997. These were :

What do the people think about acute diarrhea ? Is it their health problem ? If not, what is the health problem they need to solve? Is it related to acute diarrhea ? To answer these questions, my team and I had a chance to study in *Community Health Problem at Mou 3-4 Villages of Najomthien Subdistrict, Sattahip District, Chon Buri Province* (Watana, et al. 1997) from the 31th March to the 4th April 1997. The results of the study, using qualitative techniques, revealed that the health problem people were concerned about was "improper garbage management" with complementary results as follow

- Nearly half (12 in 30) of the respondents did not know that "Diarrhea is a communicable disease".
- Respondents perceived stale food, food from street vendors, garbage and flies, as the causes of diarrhea.
- Respondents knew how to protect themselves and their families from diarrhea.
- Respondents use medical intervention (25 in 30) when they had diarrhea; the ORS use rate was less than 50% (11 in 30).
- They all prepared food by themselves, but sometimes, purchased it from street vendors, fast food shops and restaurants.

Interesting questions arose from these findings which were:

1. Why do nearly half of target villagers not know that diarrhea is a communicable disease ?
2. Why is the ORS use rate very low ?
3. How safe are the medical interventions they used ?

4. How complete is the diarrhea communication cycle and do people understand it ?
5. How correct is people's knowledge about diarrhea ?
6. Why are people unaware of their own personal hygiene as the cause of diarrhea ?

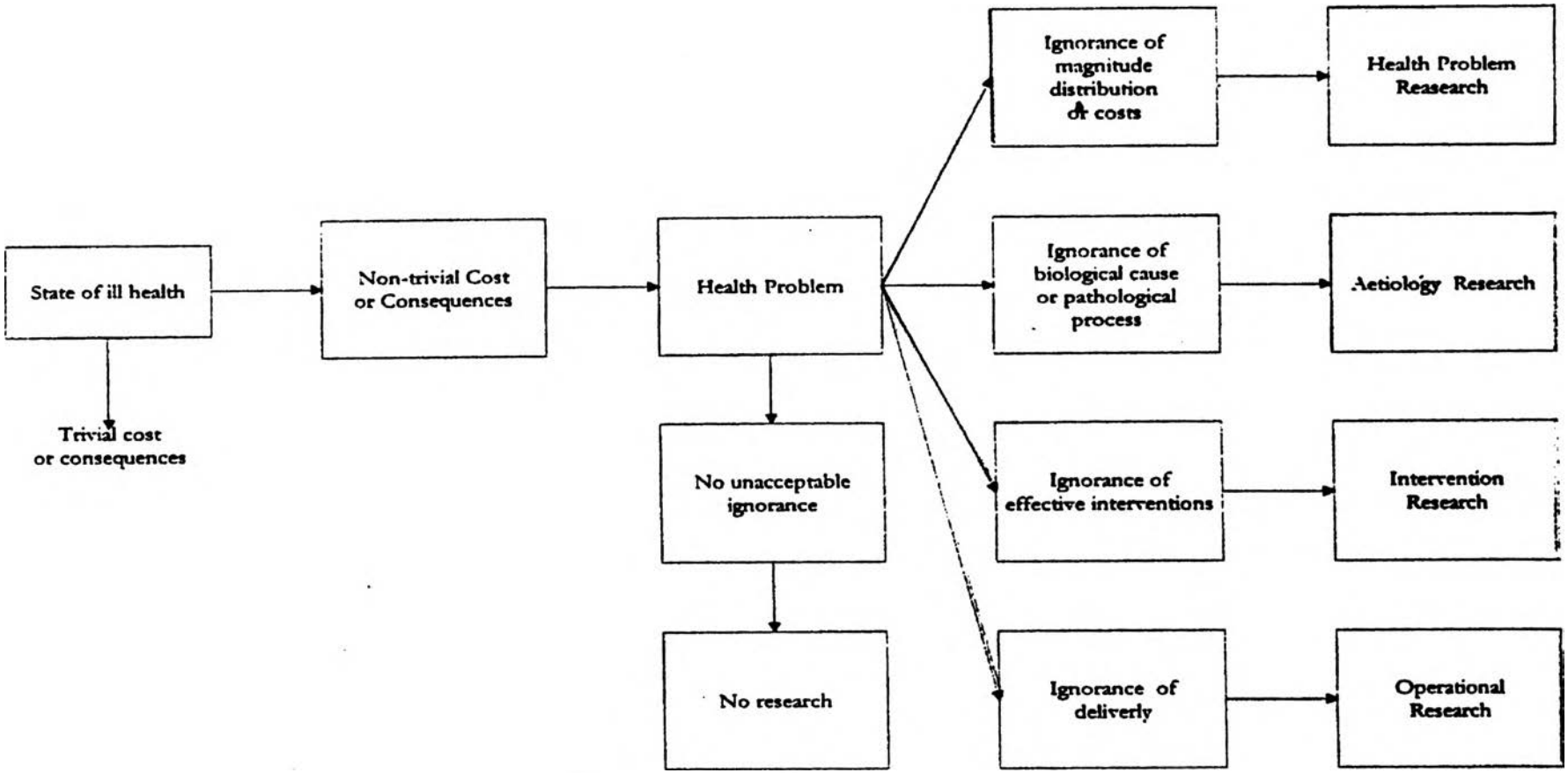
These show weak points of less effective health education programs for diarrhea control and prevention.

2.4 The New 1998 Chon Buri Provincial Diarrhea Education Program; How it is different from the routine ones and what happened after its implementation?

Routine health education programs generally emphasize, without community participation, on teaching material production and distributing products to the village health volunteers. These products and volunteers provide health messages or diarrhea prevention and self-care information throughout the community and make use of "How often they work" as the feedback measurement of "How successful the education program is". From implementation like this, (we can answer the questions "Why" mentioned in 2.3) the knowledge which the health education had taught has not been delivered to people efficiently.

This shows health personnel's ignorance of health services. Therefore, (COHRED, 1997) operation research will be chosen to solve health information services delivery problems. (see Figure 2.4.1)

Figure 2.4.1 A framework for considering a health problem and the four types of research to which it may give rise.



By Feachem RG., Graham WJ., Timaeus IM. Identifying health problems and health research priorities in developing countries. *J Trop Med Hyg* 1989:92:137.(COHRED, 1997)

However, Khamnuansilpa (1998) said, at the Northeastern Regional Development and Training Center on Primary Health Care, that operational research was modified to use in sustainable health service development.

Operational research consisted of three important stages of operation (Khamnuansilpa, Samanasang and Sila, 1998). First, problem identification. Second, determination of a problem solving strategy. Finally, strategic trial and evaluation. Many techniques were used in operational research, especially qualitative techniques, such as system framework, nominal group technique, Delphi technique, AIC technique etc. Participatory action research (PAR) was a social modified model of the operational research (OR). However, from my viewpoint PAR cannot work sell if the target group does not like to participate in answering the open ended inquiry or in discussion to get a commitment. The techniques mentioned above will be selected to use for appropriateness of each situation in PAR process. In the step of problem identification, System Framework, Nominal Group or Delphi Technique will be used.

System framework technique using in any development project (consisting of input, process, output, product and impact), will be used as a subject in group discussion of problem solving project. Nominal group technique needing an expert moderator is also useful in ascertaining community's needs and commitment. The advantage of the nominal group technique is to prevent arguments and to encourage the quiet persons, because the answers of the members will be written in a paper. No one know whose answer is being discussed or voted. In general, it takes three turns around before getting commitment. Delphi technique is similar to nominal group technique, but no discussion. The open ended questionnaires will be mailed to the experts or experienced persons to collect their answers and repeat the sending of

answered questionnaires back to them for changing until there is no change and then the final conclusion will be made. This kind of techniques takes very much time. Nowadays, Delphi technique is modified to be "Online Conference".

The step of choosing the appropriate strategy for problem solving needs many techniques. AIC (Appreciation Influence Control) technique is a well-known technique for this step. AIC technique is useful for community development. It help a group of different professionals participate in PAR process by (1) Appreciation: all positive ideas about problem solving presented by word-of-mouth, writing, or picture expression will be appreciated, (2) Influence: all imaginations from the members will be used for participatory setting the goals of community problem solving or development leading to critical thinking of strategy to reach the goals. New knowledge will be occurred in individual member during their experiences exchange or reasoning and the best strategy will be chosen and (3) Control: this concerns with managerial system in PAR process leading to participatory planning, organizing, staffing, coordinating, budgeting, monitoring and evaluating.

Rains and Ray (1995) said "PAR is a combination of community participation, research and action that supports local insights and abilities regarding the resolution of community issues. Rather than following a restricted and rigid research methodology, the process of inquiry is social and flexible, involving a collaborative interaction between the community and the researcher (Kelly, 1990) and also is part of an 'emerging paradigm of co-operative experiential inquiry', which simply stated is 'research that was with and for people rather than on people' (Reason, 1988:p.1)"

From the PAR concept by Rains and Ray (1995). It was decided to use PAR at the provincial level.

After my presentation to the Chon Buri Provincial Public Health Administrative Committee on the 27th October 1997, during the discussion of health problem priority setting, acute diarrhea was rated the first priority to be solved in 1998 and Sriracha district was selected a target area based on criteria suggested by the committee.

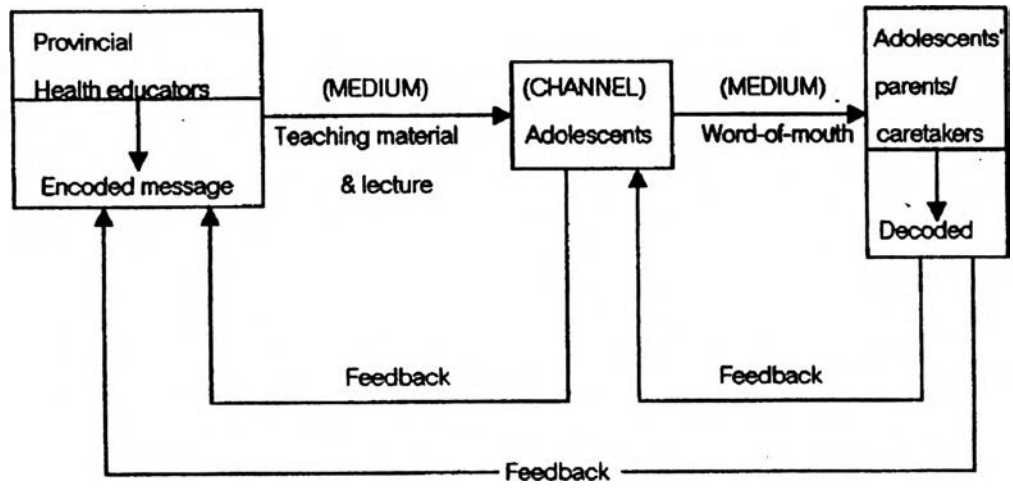
Those criteria are:

1. A district where the acute diarrhea morbidity rate was greater than 1,000 per 100,000 population,
2. where there were cases of severe diarrhea in the last three years (1995-1997),
3. it was the target area of "Healthy City" program in 1998,
4. it had more than one governmental secondary school.

Thus, the program for solving the acute diarrhea problem, Health Behavior Promotion Program for Acute Diarrhea Morbidity Rate Decrease in Sriracha District Chon Buri, was set.

The target population, being different from that of the routine diarrhea education program, was parents/caretakers and the program used adolescents as "the channel of diarrheal message" instead of village health volunteers (see modified communication chart in Figure 2.4.2).

Figure 2.4.2 Modified Communication Model



However, the other target population (the adolescents) of this new designed provincial education program, were expected to be family diarrhea prevention and control communicators or health message channels who got the information from provincial health educators (message senders) and then sent the information or message to their parents/caretakers. This type of communication is called interpersonal communication (Schiffman & Kanuk, 1991). The adolescents would assume the role as "the sender" simultaneously taking the role as the personal channel transfering the message or health information (knowledge about diarrhea prevention and self-care) to their parents/caretakers by word-of-mouth communication.

Word-of-mouth communication, a kind of informal interpersonal communication, tends to be a highly persuasive and very low cost medium (channel) because the sender apparently has nothing to gain from the receiver's subsequent action. Therefore, positive word-of-mouth messages can be very beneficial to a marketer; conversely, negative word-of-mouth can be diastrous because it is too

difficult to control. Feedback from the message receivers (adolescent's parents/care takers) will be verbal and nonverbal to the senders (health educators or adolescents) and will indicate how and what the receivers have received enabling the senders to modify, repeat or explain the message in more detail. For those reasons above, the modified model of communication studied here should be as decided in Figure 2.4.2.

Twelve provincial health educators were trained for this program on what and how to teach adolescents in their first year at four Sriracha governmental secondary schools. The teaching materials, consisting of diarrhea communication cycle posters and a family manual for acute diarrhea prevention and self-care, were produced by the health educators team using WHO's (1992) student manual as a guideline. The content, related to acute diarrhea prevention and self-care behavior suitable for Thai-lifestyle, are the followings :

1. Diarrhea communication cycle education, e.g. revision of context on diarrhea definition, communication cycle and production of teaching materials;
2. Personal hygiene education, e.g. hand washing with soap and water before eating, food preparation and after defecating;
3. Food hygiene education, e.g. eating freshly prepared foods, proper keeping or covering of prepared foods, simmering of stale food, cleanliness of eating utensils and cleanliness of family latrines;
4. Water education, e.g. ways to minimize contamination of available sources of clean water and drinking water;
5. Solid waste disposal, e.g. ways to get rid of solid waste/garbage;
6. Safe disposal of stools from diarrhea;

7. The early recognition and treatment of dehydration;
8. ORS solution/water and food intake during diarrhea and recovery;
9. Other home treatments of diarrhea.

The 1998 provincial diarrhea education program, Health Behavior Promotion Program for Acute Diarrhea Morbidity Rate Decrease in Sriracha District, Chon Buri, was implemented between the 19th January and the 3rd Feburary 1998 together with other public health programs to reduce the diarrhea morbidity rate such as:

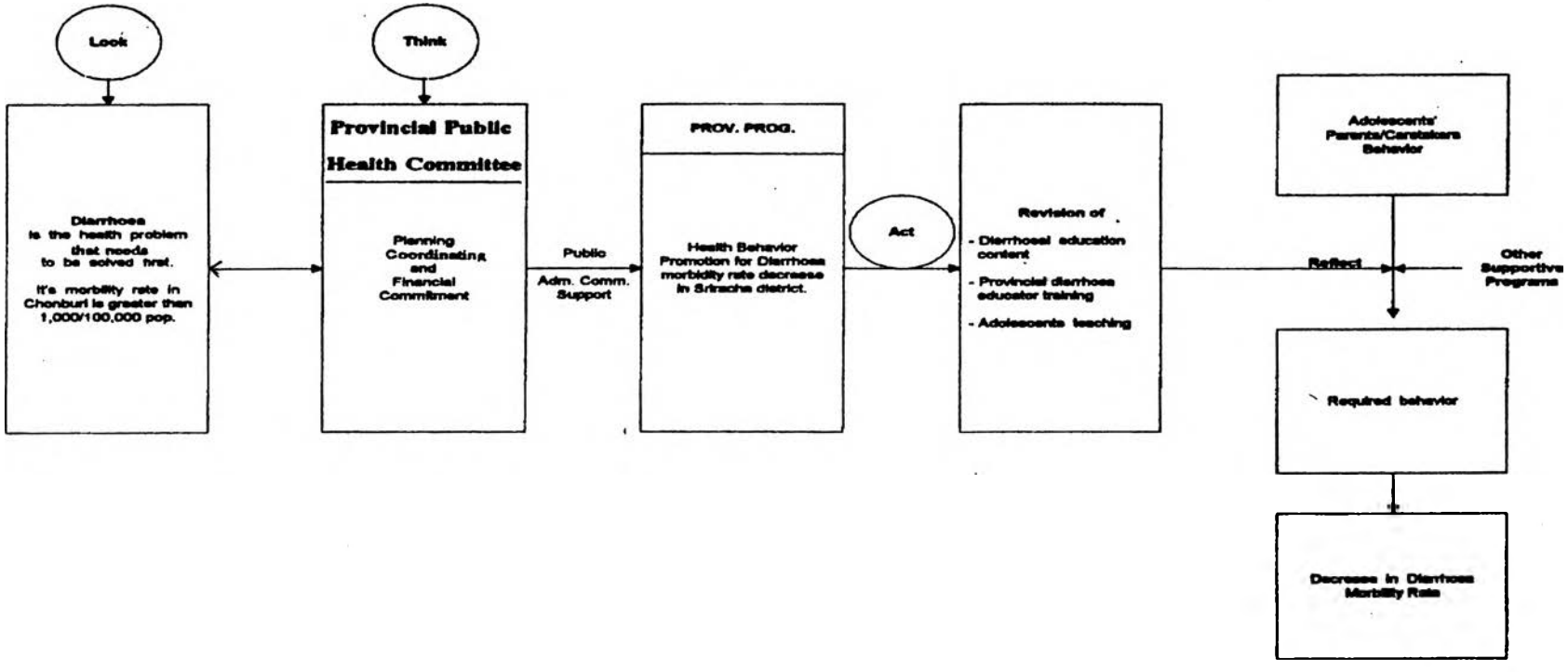
- Active surveillance program for severe diarrhea control and prevention;
- Chon Buri active surveillance program for water and food sanitation and environmental health;
- 5 R – Garbage reduction program;
- Healthy City Program; and
- Sanitary hand washing and tooth brushing demonstration school program.

The main strategy used in this education program was acute diarrhea instruction for adolescents (12-15 years old) who were expected to be the sensitive group able to perceive scientific knowledge with logical thought and capable of abstract and systemic thinking (Shaffer, 1996) and to transfer the message of diarrhea prevention and self-care to their parents/caretakers. In addition, it was hoped that the adolescents would continue in the role of family reminders of diarrhea prevention and self-care behaviors or other healthy behaviors for their parents/caretakers. Furthermore, they would assist anyone who made diarrhea, or other health problems, a topic of discussion, effecting changes in accustomed behaviors finally resulting in the required healthy behaviors. This is a strategy that Klepp, et al. (1994) used in their study on "The school-based

program, AIDS education for primary schools in Tanzania: an evaluation study ". They concluded that HIV/AIDS education for sixth_and seventh graders (average age 14.0 years) could foster increased knowledge about_and communication regarding HIV/AIDS. This program appeared to have succeeded in making AIDS a topic of discussion outside as well as in the school setting with parents, other relatives and religious leaders following the intervention. They hoped their program may have contributed to an increase in the community's awareness of HIV/AIDS

There were differences between the Chon Buri 1998 provincial education program and Klepp et al.'s. These differences were health educators and teaching material production. Klepp and his team joined teachers and local health workers attending a one-week training workshop (participants received an allowance of 17.14 USA dollars per day), and used participatory learning system in teaching. The Chon Buri program was characterized by one-way lectures from provincial health educators and one-way teaching materials. The conceptual framework of the 1998 provincial diarrhea education program is shown in Figure 2.4.3.

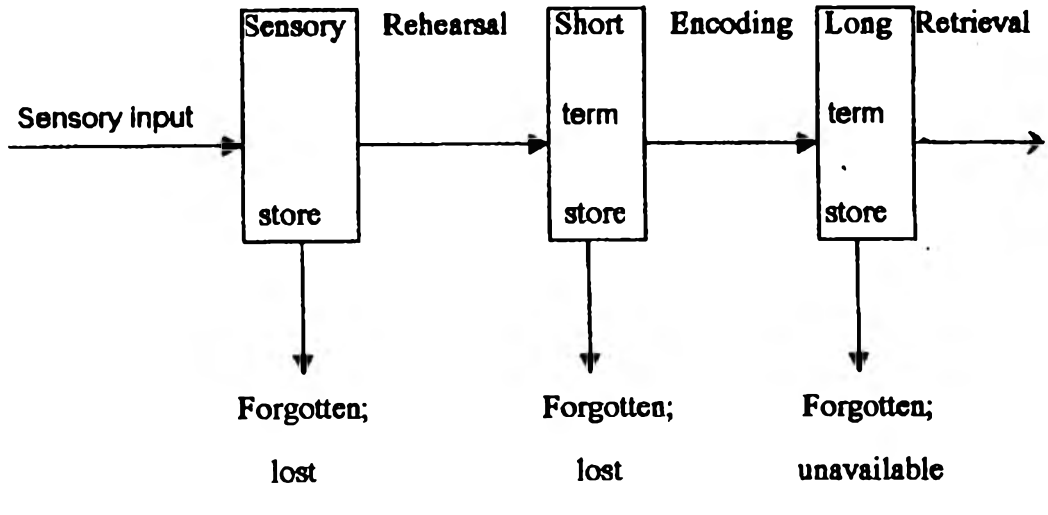
Figure 2.4.3 Conceptual Framework of New 1998 Chon Buri Provincial Diarrhea Education Program.



This conceptual framework is concerned with PAR at the provincial level and it also is relevant to cognitive learning theory (Shaffer, 1996), a kind of learning that represents problem solving learning, which enables individuals to gain some control over their environment. Cognitive learning is a process that continually evolves and changes as a result of newly acquired knowledge which may be gained from reading or observation or thinking or from actual experience. Both newly acquired knowledge and experience serve as feedback to the individual and are the basis on which he or she acts, sustains or modifies behavior in similar situations in the future.

Learning with both illustrations or pictures and verbal information is more likely to be encoded and stored than learning by only one method; because both types of teaching are important in forming an overall mental image, leading to a long term store of memory (Schiffman & Kanuk, 1991) which is an important part of memory structure (see Figure 2.4.4).

Figure 2.4.4 The structure of memory: Information-Processing Stores and Process.



Rehearsal, encoding and retrieval are the important factors of long term stored memory which lasts for days, weeks and even years. New learning which affects data in the long term storage can interfere with retrieval.

Thus, the expectation in the provincial diarrhea education program was to see the adolescents' parents/caretakers learn by talking with their children to affect their retrieval of diarrhea prevention and self-care information leading to modification of their attitudes, establishment of family values or model behavior as their habit.

From the expectation above, there are many issues:

I. What are the lifestyle behaviors related to adolescents'parents/caretakers acute diarrhea prevention and self-care?

II. What will happen to their lifestyle behavior after implementation of the 1998 provincial diarrhea education program ?

III. Will the parents/caretakers learn how to prevent acute diarrhea and how to manage acute diarrhea self-care for their children ? If not, why ?

IV. Is there any alternative strategy for developing and sustaining the required behavior for acute diarrhea prevention and self-care among Thai people ?

To answer these questions, the program will be evaluated. However, from my 20 years work experience as a pharmacist and technical officer of communicable disease control and presently public health expert, most Thai health programs lack evaluation of quality. Thailand spends a lot of money in program implementation and evaluation getting only the same non-scientific analyzed outcomes or reports. That is why human behavior health problems have remained for many decades.

Everyone would not be afraid of negative assessments and evaluations, if they understood the reasons for conducting program evaluation (Posavac & Carey, 1980). Those reasons are :

1. To fulfill the accreditation requirement.
2. To account for funding.
3. To answer requests for information.
4. To help administrative decision making.
5. To assist staff in program development.
6. To learn about unintended effects.

Although there was a provincial evaluation plan for this program, it was created traditionally as a collection of quantitative information about adolescents' diarrhea knowledge (pre and post diarrhea education), hand washing behavior, having and using sanitary latrines, food consumption behavior of the sample represented Sriracha population and finally, checking of Sriracha morbidity rate of acute diarrhea from reporting record comparing with two to three years before. Such a style of evaluation like this cannot completely serve the purpose of theoretical program evaluation. Such resulting information cannot assist staff in program development or tell about unintended effects, especially they cannot answer the research questions about the weak points in routine health education programs for acute diarrhea prevention and control being mentioned on page 14.

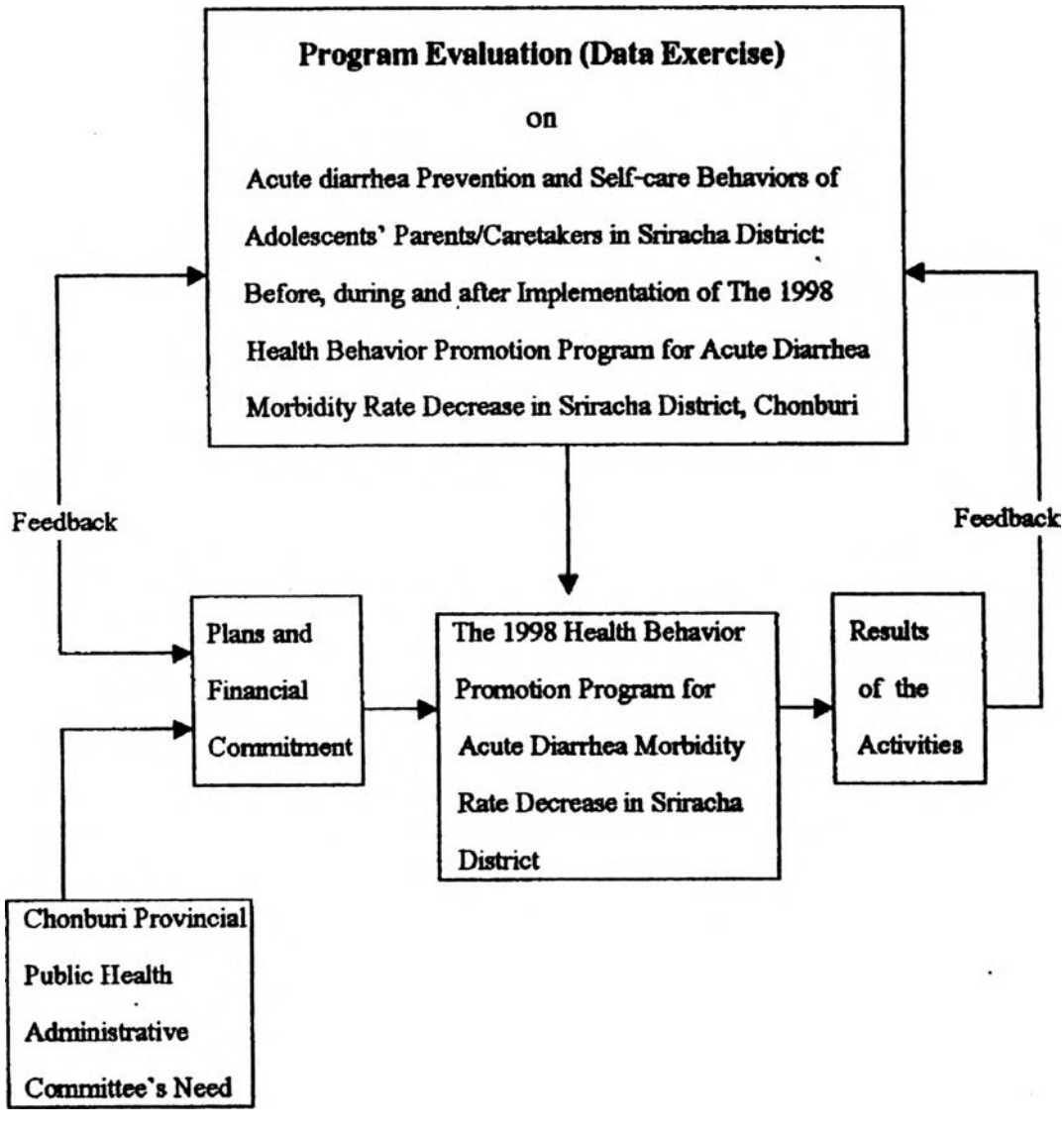
The United Kingdom meaning of evaluation emphasizes the activities of an educational institution and in anthropological research refers primarily to the evaluation of teaching and organization activities which support student learning including the assessment of student performance as just one aspect or function (Calder, 1994).

Calder (1994) also suggested basic stages of evaluation as:

1. Identify an area of concern
2. Decide whether to proceed
3. Investigate the identified issue
4. Analyze findings
5. Interpret findings
6. Disseminate findings and recommendations
7. Review the response to the findings and recommendations and agree on any corrective actions
8. Implement agreed upon actions

From these overviews of program evaluations, the data exercise of behaviors assessment on acute diarrhea, prevention and self-care of adolescents' parents/caretakers in Sriracha district was performed to answer my issues with the total conceptual framework adapted from Posavac & Carey's schematic diagram of the place of evaluation as a feedback loop for a human service program (see Figure 2.4.5).

Figure 2.4.5 Adapted from Posavac and Carey's Schematic diagram of the place of evaluation as a feedback loop for a human service program (Posavac & Carey, 1980: p. 16).



This approach of evaluation, also is relevant to participatory action research through which we can build dialogue with *provisional goals* based upon our present knowledge or reality, then "Look" to gather data, educate and analyze, and compare with the goal as a starting point. Repeat this in the future to "Think", to investigate

process-oriented action including planning, implementing and then developing an "Act" assessment which will produce new knowledge created by new deeper understanding like "Reflect".

This will be represented as a linear process of "Look" , "Think", "Act" and "Reflect" and shows the grass-roots linkage (Smith, Pyrch and Lizardi, 1993) which is linked continuously with the aid of combining quantitative and qualitative techniques of research. Therefore, the conceptual framework of data exercise was modified by linkage of "Look", "Think", " Act" and "Reflect" at the provincial level to form another model as shown in Figure 2.4.6.

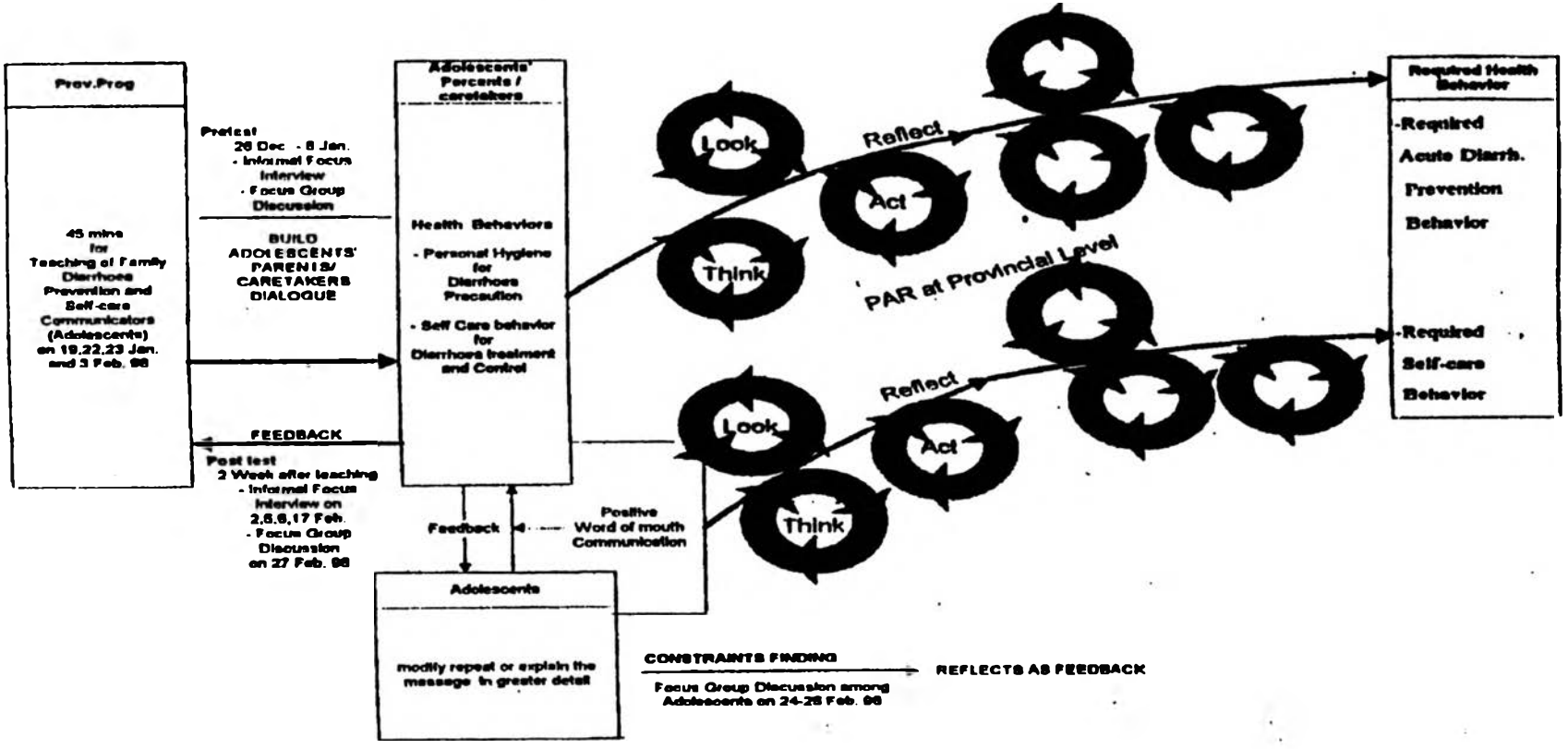
2.5 Why PAR Was Chosen as the Alternative Strategy in the Proposal.

The results from quantitative data exercise (see Chapter IV in detail) showed that most respondents increased knowledge about diarrhea as a communicable disease (from 63.4 % before to 84.1% after program implementation) by short term storage of leaning about good personal hygiene for acute diarrhea prevention and good self-care for acute diarrhea illness.

However, it was found that 42.7% of the respondents (adolescents' parents/caretakers) did not receive messages from their children compared with 60% data collected by qualitative focus group discussion among four qroups of adolescents. The source of the increased knowledge of adolescents' parents/caretakers was questioned; was it the adolescents or the interviewers, and it was clear such increased

knowledge would be lost if there was no rehearsal or retrieval. This made me delay concluding my assessment on acute diarrhea prevention and self-care of the adolescents parents/caretakers.

Figure 2.4.6 Conceptual framework for data exercise together with 1998 Provincial Diarrhea Education Program.



There were many interesting data about diarrhea episodes from the respondents. The four (4.9%) of the under-5 year old group, 16 (19.5%) of the 6-12 year old children and 20 (24.4%) of the respondents had got diarrhea last year (see Table 4.7.1.5). Most of the respondents' households (43%) had four members, the minority (24.4%) had five members (see Table 4.7.1.1). Thus, each family is approximately 4.5 members.

Approx. Total members (from 86 houses) = 387 as population studied

Total sick persons = 44

The approximate rate of sickness/100,000 pop.

$$= \frac{\text{Total sick persons}}{\text{Population studied}} \times 100{,}000$$

$$= \frac{44 \times 100{,}000}{387}$$

$$= 11{,}369.5$$

The Chonburi reported acute diarrhea morbidity rate in 1997 was 2,111. It was approximately five times less.

If my data is real, it would extrapolate that the target people had their own competency for acute diarrhea self-care but, lacking of prevention awareness especially awareness of warning symptoms of watery stool diarrhea and liquid stool diarrhea because 81.7% of respondents were frightened by mucous stool with blood, but only 7.3% and 4.9% were frightened by watery and liquid stool respectively. However, after two weeks of the provincial diarrhea education program implementation, an increased percentage (17.1%) of respondents were frightened by watery stools and a decreased percentage (3.7%) were frightened by liquid stools. These showed the weak point of

people, lacking understanding of dehydration danger which would have been explained by the health educators or health personnel.

Those I had mentioned in this chapter were the reasons why I chose PAR at all levels of community in my proposal. It is necessary to understand what the people had been expected to learn about acute diarrhea as applied to their own knowledge, their own strategies and their own needs to get long term storage of memory. This long term storage of memory will remind them to practice good personal hygiene behaviors for diarrhea prevention and beware of each type of diarrhea warning sign for first-aid self-care of body dehydration.

2.6 Conclusion

In my point of view, PAR like the essential national health research (ENHR) strategy (Council on Health Research for Development (COHRED) 1997), will be a competency strategy in the world used for developing human behaviors, and in the near future it must be generally used in every type of research that needs multidisciplinary researchers. For the health care market, PAR will be a strategy that may change monopolistic competition models of the health care market (Phelps, 1992) to a "more open competition market" by more negotiation from customers or people engaging in a search for a "better" service (improved price, quality or both). This corresponds with health education service. The better service must be the service that provides improved scientific knowledge for people who participate in a search for a "value of life" matching their lifestyle. Therefore, PAR will help the health educators or human health behaviorists know and understand "What people think and need, and

why people do or do not ?" PAR also helps them recheck whether people understand or are satisfied with everything they explained, served, supported or provided and anything else they would like to know for case analysis by engaging in dialogues with the target group/groups using open ended questionnaires to make a "grass-root" dialogue encouraging the people or community to engage in PAR process leading to "political will" empowering.

References :

Arca, R., Figueroa, P., Freij, L., Janjaroen, W., Lansang, M.A., Neufeld, V., Nuyens, Y., Okello, D., Paulino, R., Raymundo, C., Sitthi-amorn, C., Suwanwela, C., Tan-Torres, T., & Tollman, S. (1997). "Introduction." In M.A. Lansang (Integretor), *Essential National Health Research and Priority Setting: Lesson Learned.* Manila: Council on Health Research for Development (COHRED).

Atwood, K., Colditz, G.A., & Kawachi Ichiro. (1997). From Public Health Science to Prevention Policy: Placing Science in Its Social and Political Contexts. *American Journal of Public Health* 87(10), 1603-1606.

Babbie, E. (1995). *The Practice of Social Research.* (7th ed.). Belmont: ITP.

Calder, J. (1994). *Program Evaluation and Quality.* London: Kogan Page Limited.

Dalis, T.G. (1994). Effective Health Instruction: Both a Science and an Art. *Journal of Health Education* 25(5), 289-294.

Khamnuansilpa, P., Samanasang, S., & Sila, S. (1998). *Operation Research: The Tool of Social Development.* Khonkaen: Pha-Thamakhan Publishing.

Klepp, K., Ndeki, S.S., Seha, A.M., Hannan, P., Lyimo, B.A., Msuya, M.H., Irema, M.N., & Schreiner, A. (1994). AIDS education for primary school children in Tanzania: an evaluation study. AIDS, 8(8), 1157-1162.

Phelps, C.E. (1992). *Health Economics.* (n.p.): Harper Collins Publisher Co.

Posavac, E.J., & Carey, R.G. (1980). *Program Evaluation: Method and Case Studies.* New Jersey: Prentice-Hall, Inc.

Rains, J.W., & Ray, D.W. (1995). Participatory Action Research for Community Health Promotion. *Public Health Nursing* 12(4), 256-261.

Ratnaike, R.N., & Chinner, T.L. (1994). The Importance of Health Education in Programs to Control Diarrhoea: Experience in an Australian Aboriginal Community. *Journal of Health Education* 25(5), 283-287.

Schiffman, Leon G.,& Kanuk, L.L. (1991). *Consumer Behavior.* (4th ed.). New York: Prentice-Hall Inc.

Shaffer, D.R. (1996). *Developmental Psychology Childhood and Adolescence*. (n.p.): Pacific Grove: Brooks/ Cole Publishing Company.

Smith, S.E., Pyrch, T., & Lizardi, A.O. (1993). Participatory actioon-research for health. *Wold Health Forum*, 14, 319-323.

Watana, K., Manit, P., Panitsukho, R., Srisakul, M., Ratanachotipanit, Ng., Pongchavalit, B., Wichitkulsawat, W., Aekwanitsakulporn, S., & Kirdphan, M. (1997). *Community Health Problem at Mou 3-4 Villages of Najomthien, Sattahip District, Chon Buri Province*. Chon Buri: Chon Buri Provincial Public Health Office.

World Health Organization. (1992). *Readings on diarrhoea: student manual*. Geneva: WHO.