

Proposal for the Improvement of Lifestyle with Regard to School Health in Thailand using the HQC Method

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This paper reports on activities carried out as part of the International Educational Cooperation Base System by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The purpose of this project is to promote a transfer of educational technology on the school health area. We have proposed a method for the improvement of school environment health and school safety, as well as improvement in the lifestyle, growth and development, and physical strength of students. In particular, the paper reports on the proposal of the Health Quality Control (HQC) method for the improvement of students' lifestyle. We proposed an improvement strategy at five conferences for schools participating in the scheme in the Chiang Mai and Ubonrachathani provinces in Thailand. In the lifestyle improvement strategy based on the HQC technique, we proposed (a) a plan-do-check-act (PDCA) cycle, (b) a cause and effect analysis using a fishbone diagram, and (c) an HQC check sheet. Participating schools reported on lifestyle improvements and school hygiene and safety. The reports were based on the improvement strategy proposed by us, and they confirm its effectiveness. Currently, we are in the process of constructing a model school to exemplify the improvement strategy. Moreover, an implementation manual is being prepared based on these results.

Keywords: School health, Lifestyle, Fishbone diagram, Health Quality Control

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1. Introduction

This report describes a practical example of the HQC (Health Quality Control) method (Nishijima, 1990) for the improvement of lifestyle, focusing on the area of school health, as part of the activities of the International Educational Co-operation Base System conducted by the Ministry of Education, Culture, Sports, Science and Technology. In numerous developing countries where many people suffer from health and nutrition problems, an improvement in school health is urgently needed in the primary education sector to solve the health problems of students (Vir, 1987). There are wide range of problems, including sexually transmitted or infectious diseases, drug abuse, nutrition, hygiene, lifestyle, school safety, and health education.

Although there are many reports on sexually transmitted or infectious diseases and on hygiene (including dental hygiene) (Luong, 2003; Kasai and Ohsawa, 1999; Viglid, et al., 1999; Aggarwal and Kumar, 1996; Davies, 1991), there are only few case studies on the implementation of lifestyle improvement (Cross, 1994). Another big problem is students' lack of consciousness of health and good health habits.

Although there has been co-operation with regard to international medical assistance, there has been little co-operation focussed on the area of school health (Ohsawa, 1988).

Furthermore, while there are some existing reports on the problems and status of developing countries, there are not many detailed reports on local co-operative activities.

This project aims to establish a local model school to exemplify the improvement strategy, as the first step of the international educational co-operative project through activities carried out in co-operation with local supporters. The project was carried out in several schools in Samoeng County, Chiangmai Province located in northern Thailand and Ubonratchatani Province in the north east of Thailand. We proposed methods for improvement, focussing on the issues of school environment health and school safety, as well as the lifestyle, growth and development, and physical strength of students. In addition, as a guide for local teachers, an implementation manual on the subject is being prepared.

2. Activities

2.1. Subjects

Since 2003, after examining the feasibility of project in the relevant regions, we have been holding local conferences to propose methods for improvement, based on our experiences in Japan. We held a total of five conferences, two in Samoeng County of Chiangmai Province located in northern Thailand, and three in Ubonratchatani Province located in the north east of Thailand. In 2004, we held four conferences to propose methods for lifestyle improvement using the HQC technique. The subjects in Chiangmai Province were 23 elementary schools in the second educational district, which are located in the mountainous area of Samoeng County. They are all small schools with few students (mean student roll: 92). Seventy-seven teachers from forty-two schools participated in two conferences held in Chiangmai Province. The subjects in Ubonratchatani Province were eleven schools (mean student roll: 335), which are located near the national border and considered to be the most destitute areas in the province. Fifty-three teachers from nineteen schools participated in two conferences in Ubonratchatani Province. In both provinces, the school principals and the teachers in charge of health affairs encouraged teachers to participate in the conferences.

The schools were selected according to the following criteria:

- the school is very poor due to its location in a remote area and school health is not adequately

managed;

- the school has someone who is eager to participate in the project;
- the school is expected to substantially benefit from participation;
- the school can maintain a co-operative relationship with us for a comparatively long duration.

We selected these remote schools because if the improvement scheme worked well in schools that have financial difficulties, and in which school health was not well managed, then it could probably be applied to other schools.

2.2. Proposal Method

At the local conference for each area, we proposed strategies for improvement, based on our experiences in Japan. Four conferences were held with a total of twenty-two participants including teachers from co-operating schools, Japanese project representatives, and the people in charge of each area. The people in charge of each area, representing the project's co-researchers, had instructing experience in Japan. In addition, there were nine local supporters. The local supporters corresponded with the co-operating schools and managed the conferences. They also served as Japanese-to-Thai interpreters when we made our improvement proposals. In addition to the Japanese proposals, co-operating schools reported the status quo and the main problems with regard to school health. Following the presentation of the proposals, there was Q&A session with the Japanese staff in charge of each area. Each of the co-operating schools presented a report using photos for about five minutes. In the second conference, reports were made on activity status and the feasibility of the Japanese proposals.

2.3. Content of Proposal

At the conferences, we introduced the HQC technique as a method of improving basic lifestyle and of checking and improving problems relevant to school hygiene and safety.

Applications for the HQC technique vary, including school health services, individual guidance by school nurses, self-management of health, and condition management of athletes (Nakano, et al., 2003; Kinugasa, et al., 2002; Nakano and Nishijima,

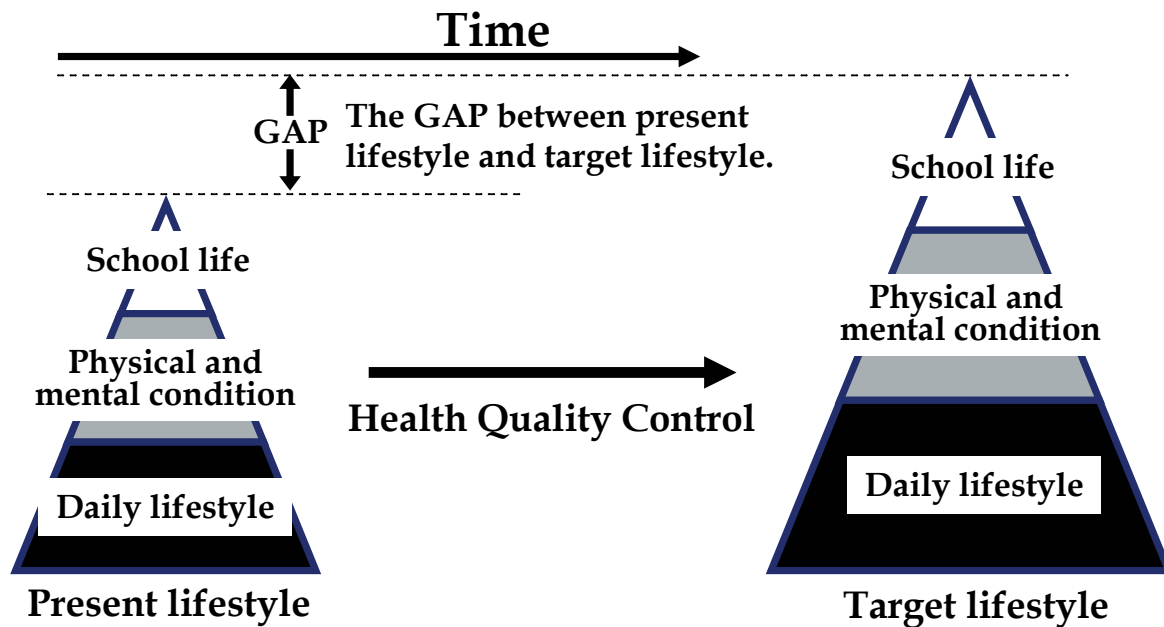


Figure 1 Concept of lifestyle improvement using HQC

2002; Nishijima, et al., 1994). In addition, the technique has been proposed as a method for improving the daily lifestyle of children, allowing them to lead a comfortable school life (Nishijima, 1990; Nishijima, et al., 1990). Nishijima (1990) reports that for children to enjoy a fulfilling school life there are basic lifestyle and daily physical and mental needs that must be met. Fulfillment of school life has hierarchical structure with physical and mental conditions and basic lifestyle. That is, school life is founded on such basic lifestyle concepts as daily rhythm and dietary and sleeping habits. Moreover, physical and mental conditions are maintained with the support of a sound basic lifestyle. Furthermore, good physical and mental conditions realize an enriched school life. As the first step to obtain this ideal school life, basic lifestyle should be improved.

Students' basic lifestyle consists mainly of exercise, meals, and sleep (Komata, 2003). Problems that arise from a disordered lifestyle can be improved by recognizing and managing lifestyle problems. In other words, everyday self-management of behaviors that might be the cause of problems can result in the acquisition of a sound lifestyle. Since lifestyle disorder occurs inevitably as a result of problematic behaviors, each problem should be solved in daily life.

The HQC method is an application of Quality Control (QC) – which is generally used in the

manufacturing industry to eliminate defects by controlling the quality of factory merchandise – to health management. Its basic ideas are focused on the improvement of health by betterment of defects in health activities. The basic procedure of the HQC method comprises of *preparation, implementation, evaluation, and review*, which corresponds to each stage of the PDCA cycle: *plan, do, check, action*. That is, *preparation* corresponds to *plan*, *implementation* to *do*, *evaluation* to *check*, and *review* to *action*, respectively. The PDCA cycle is a procedure for continuous improvement through the repetition of this series of processes. The idea is widely popular in Thailand, which is the subject area of this project. PDCA cycle diagrams are often posted in local schools. Taking this status into account, we made proposals for lifestyle improvement to local teachers using the HQC method based on the PDCA cycle. In addition, there are seven QC tools used in the QC method (Ishihara, et al., 1980). These tools include a fishbone diagram for cause and effect analysis to summarize causes of a problem and check sheets for problem-solving activities. The HQC method proposes such statistical analysis methods as the Pareto Diagram, which enables assessment of obtained data in addition to verifying activities. Therefore, statistical analysis is possible through this method. At the conferences, we taught participants how to use the fishbone diagram for cause and effect analysis and how to

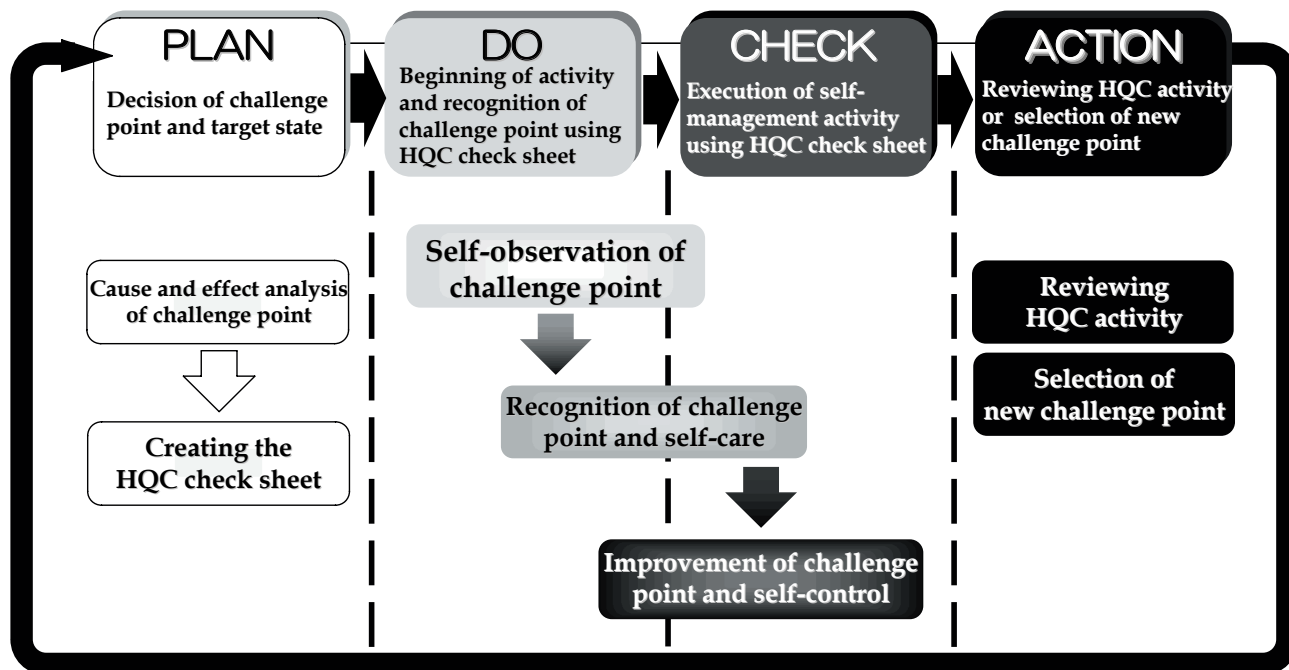


Figure 2 Lifestyle improvement using HQC and PDCA cycle

prepare and apply a HQC check sheet. The following are the specific proposals.

2.4. Proposal of PDCA Cycle

We made our implementation proposal of the HQC technique based on the PDCA cycle. **Figure 2** shows the proposals in diagrammatic form.

We explained that, in the ‘*plan*’ stage, teachers first decide which lifestyle problems should be improved and, if possible, students themselves can point out problems. Next, using the fishbone diagram, we introduced an organizing system of problem solving factors. At the same time, we demonstrated how to prepare an HQC check sheet.

In the ‘*do*’ and ‘*check*’ stages we explained how to recognize problems and control them by checking daily lifestyle improvements using the HQC check sheet.

In the last stage, ‘*action*,’ we explained how to review activities and tackle new problems. In addition, we demonstrated that using the HQC method can improve lifestyle step by step. The first step is to observe and recognize problems. The next step is for subjects to positively improve lifestyle problems by themselves (self-care). The last step is for them to establish an ideal lifestyle by themselves (self-control).

2.5. Guidance of the Fishbone Diagram

We explained how to summarize lifestyle problem-solving factors using a fishbone diagram. Since it was the first time that local teachers had used a fishbone diagram, a specific example was presented to emphasize its important points. They were: 1) habits to keep your sanitary body; 2) habits to prevent obesity; 3) habits to keep your sanitary classroom. Particularly in the first of these three points, we presented two concrete examples, the fishbone diagram and the HQC check sheet. The important points for constructing a fishbone diagram are:

- (a) to sufficiently extract relevant factors;
- (b) to disregard factors irrelevant to the problem;
- (c) to specifically express factors;
- (d) to mark factors of importance that can be checked daily.

The teachers who participated in the conferences were instructed to prepare fishbone diagrams that estimated the lifestyle problems of their students. These diagrams were photographed for future reference and for preparation of the implementation manual.

2.6. Guidance of the HQC Check Sheet

The HQC check sheet is a primary tool in the implementation of the improvement strategy. In

order to prepare the HQC check sheet properly, the following important points were emphasized:

- (a) to make check sheets as individualized as possible because check items may differ according to the individual or the issue in question;
- (b) to compose check items in relation to fishbone diagram;
- (c) to set at least one item as a starting point that can be checked every day;
- (d) to be able to obtain feedback from daily checking.

In addition, we presented an example of the fishbone diagram and HQC check sheet for "keep your sanitary body" (see **Figure 3**, **Figure 4**).

3. Outcomes

The primary target of this project is establishment of a improvement model school. So far we have proposed methods for improving problems concerning school environment health and school safety, as well as the lifestyle, growth and development, and physical strength of students. The teachers of the co-operating schools made reports on a wide variety of lifestyle, health and safety issues. They indicated lifestyle improvements in the acquisition of good exercise habits and hygienic behavior. There were also environmental health improvements noted in terms of garbage separation and regular restroom cleaning. School safety also saw an improvement in the creation of a safety maps showing dangerous areas around schools. The teachers applied the HQC technique introduced in this report to the improvement of students' lifestyle and school environment health. A detailed fishbone diagram and an HQC check sheet were presented showing students' tooth-brushing habits. For improving lifestyle and school environment health, the HQC technique was extensively and positively applied. Moreover, we learned that their improvement reports accounted for the feasibility of our improvement proposals and their usefulness for the improvement of school health in Thailand.

Based on the reports of the teachers from co-operating schools and the other points discussed above, we are in the process of preparing a provisional instruction manual. The following are the four main points of the manual explaining the HQC technique:

- (a) a summary of lifestyle improvements using the HQC technique;
- (b) keywords and tools of the HQC technique;
- (c) methods of promoting lifestyle improvements focused on by the HQC technique;
- (d) a specific example of how to prepare a fishbone diagram and an HQC check sheet.

In regard to the first of these four points, we simply explained the schematic diagram shown in **Figure 1**. Next (in '(b) keywords and tools of the HQC technique'), we illustrated the important criteria for creating a PDCA cycle, fishbone diagram, and HQC check sheet. These were the same as the proposals outlined at the local conferences. In the third part (c), we explained the phases of the implementation procedure, in accordance with the PDCA cycle. Lastly, we presented the three fishbone diagrams that had been most frequently created and reported on by teachers from co-operating schools. These were: 1. "A strategy to keep your hands and body clean;" 2. "A strategy to manage school environmental cleanliness"; and 3. "A strategy to protect students from sickness." The most frequent of these was the first, "1. A strategy to keep your sanitary body". The fishbone diagram and HQC check sheet from this report are shown in **Figures 3** and **4** (Ohsawa, et al., 2005). We distributed the provisional manual to the participants of the second conference in order to facilitate a Q& A session. The subjects covered are now under consideration with a view to creating a better manual.

This project examined the feasibility of establishing an international educational co-operation model for the improvement of school health by: 1) proposing improvement strategies; 2) analyzing reports from co-operating schools on the outcomes of these strategies; 3) preparing and presenting a manual of improvement strategies.

In the future, we aim to further promote the setting up of an improvement model with better execution strategies and manuals. In addition to the present systems, we hope that participants will be able to assess the results of their activities based on statistical data and analysis.

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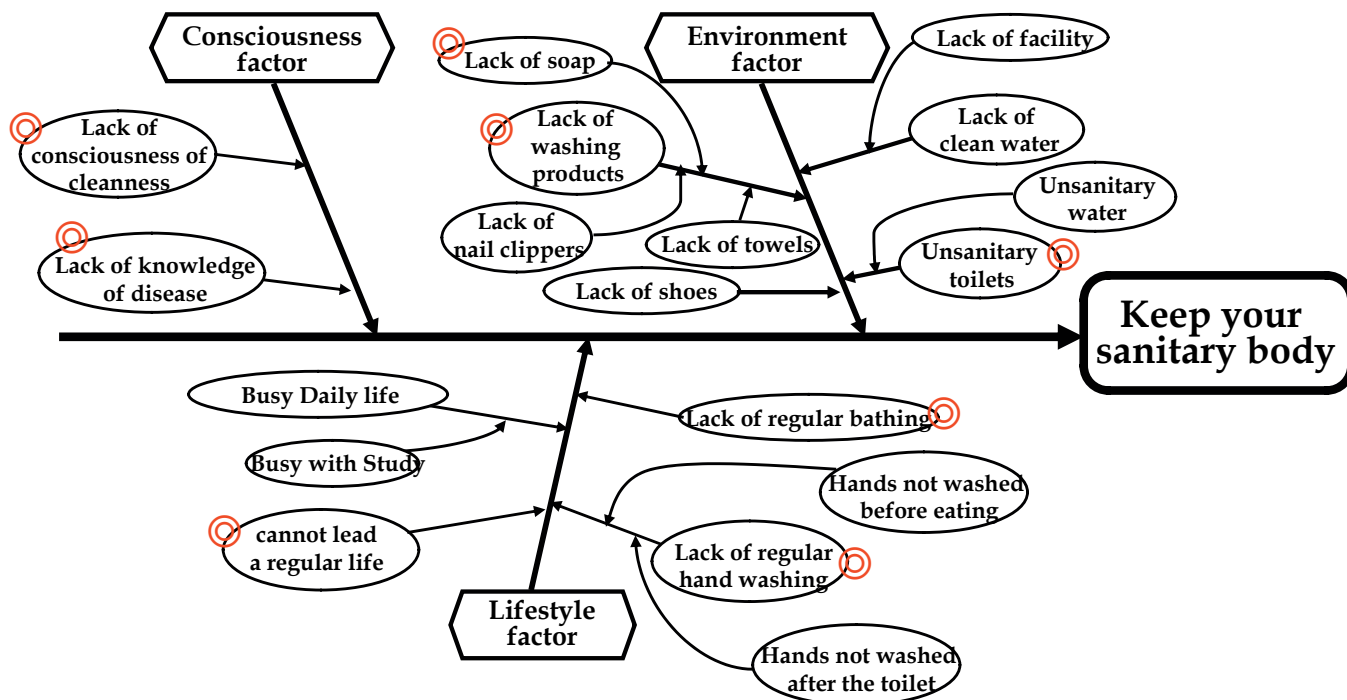


Figure 3 “Fishbone Diagram” for “keep your sanitary body”

“HQC sheet” for “Keep your sanitary body” / - /

| Classification | Items | Target | Mon | Tue | Wed | Thu | Fri | Sat | Sun |
|-----------------|------------------------------------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Basic Lifestyle | Bedtime | | : | : | : | : | : | : | : |
| | Getting up time | | : | : | : | : | : | : | : |
| | Sleeping hours | | : | : | : | : | : | : | : |
| | washing hands befor breakfast | | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No |
| | washing hands befor lunch | | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No |
| | washing hands befor dinner | | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No |
| | bathing habits | | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 |
| Enviroment | state of using soap | | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 |
| | cleanness of toilet | | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 |
| Consciousness | Today's consciousness to cleanness | | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 | 5-4-3-2-1 |

Figure 4 "HQC sheet" for “keep your sanitary body”

proposals in Thailand. We would also like to thank Mr. Manit Yimyeam, Chief Director of the NIKO NIKO Foundation, who corresponded with participating schools and managed the conferences in Chiangmai Province. Finally, we are grateful to Mr. Sittipong Srilar, Eighth-grade Education Supervisor of Ubonratchatani Province, who corresponded with participating schools and managed the conferences in Ubonratchatani.

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- American College of Sports Medicine