

AN EXPERIMENT IN HEALTH EDUCATION IN CHINESE COUNTRY SCHOOLS

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SINCE over 85 per cent of the Chinese population live on the farm, it is perfectly obvious that significant improvements of this country can occur only when the standard of living of the millions of farmers is improved. Anyone who has any amount of knowledge concerning the life of our farmers realizes the seriousness of their total lack of health consciousness. In order to develop health consciousness among the peasants, the Chinese National Association of the Mass Education Movement has included in its four-fold program of rural reconstruction (i.e. cultural education, livelihood education, public health, and citizenship training) for working out practical methods of health education. Sir Arthur Newsholme with his wide experience in public health has well said that only four types of health education are fruitful, "first, health teaching to those actually engaged in caring for the sick, whether physicians, or nurses, or students for such future work; second, health teaching to those who, at infant welfare centers or elsewhere, deliberately attend in search of such teaching; third, health teaching to the members of official health organizations and of voluntary agencies who organize public health measures and the care of the sick, and lastly, health teaching as a systematic part of school life." The validity of his expressions is substantiated by all those who have devoted themselves to the cause of protecting the health of the people. Nowadays, whenever

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the technique of publicity is applied to spread gospels of health, it is considered as an adjunct to specific practical measures, and there is very little justification in thinking that public health publicity by itself would result in significant achievements in modifying people's mode of living. This is especially true in this country where most of the publicity methods are not practical, either because the people are too poor to afford them, or because the very high percentage of illiteracy among the peasants forms an almost insurmountable obstacle. Consequently, the students of health education in this country have come to agree that, whenever possible, health education should be conducted as a systematic part of school life.

In Ting Hsien, we have two types of schools. One is the People's School that was invented by the Mass Education Movement primarily for eliminating illiteracy among the masses. The other type is the primary school which is run according to the regulations of the Government. The latter lasts four years and the former four months. The standard text for the People's School is the well-known "People's Thousand Character Lessons," in which there are eight complete lessons on health and twelve references to health matters. As the period of schooling here lasts only four months and the classes usually take place in the evening, not much more can be done in health besides the classroom instruction as referred to. On the other hand, the primary schools are extremely important from the standpoint of developing health consciousness and habits in rural communities. In the first place, the receptive minds of children in primary schools present possibilities for health education that are not obtainable in older individuals. In the second place, most of the children who are able to enter a primary school at all usually can get through its second year, and the advan-

tages of educational continuity for two full years are far more than those offered by any other short-termed types of systematic general education in later life. Lastly, the traditions and habits of Chinese society are deeply-rooted and the shortest way of changing them is through the younger generation at school. Consequently, special emphasis has been given in Ting Hsien to development of methods of systematic health education in primary schools.

Before going into the description of methods that have been worked out in Ting Hsien, it seems necessary to say a word about the importance of experimentation in health education of the country schools. Although large cities in China are not yet modernized in the Western sense of the word, there exists already a marked difference between education in a city school and in a country school. A country school is usually single-roomed, with children of four grades under a single teacher, a man as a rule. In Ting Hsien, almost every village has a school of this kind. The school is controlled by a principal who is elected by the village people and acts as a volunteer officer of the village government. He generally dictates the policy of the school and has the right to appoint the teacher. The annual budget, the largest expenditure of a village, generally averages about \$250 a year.² The salary of the teacher varies from \$120 to \$180 a year. It is therefore quite plain that after subtracting the salary of a teacher the amount of money for promoting the welfare of the children in a country school is almost negligible. Therefore, the poverty of the school, reflecting as it does the economic status of the villagers, does not permit introduction of methods of health education that have been worked out under more favorable conditions.

²The reader should keep in mind the fact that Chinese dollars are based on silver. *Editor.*

China has been condemned by careful observers as possessing too many schools of very poor standard. As an illustration, we have normal schools everywhere, but very few good teachers for children. These teachers have learned a great deal of theory in educational philosophy or administration, but their training is so far away from realities of life that they do not even appreciate the significance of cultivating such fundamental habits and attitudes of human life as those concerned with health protection. On the other hand, it will take many years to have them replaced with better teachers even if we might have better normal schools right away. Consequently, the teachers of today are the only possible agents of health education in the country schools. Methods of health education for the children of country schools must be workable in their hands. This again necessitates experimentation.

In addition, one should not neglect to mention the lamentable paucity of medical and nursing personnel in the country. Inasmuch as each school could hardly spend more than two dollars a year for such an important activity as health protection, it is obviously impossible for a new school to support a full-time nurse, not to say a physician. It is equally impossible to expect a nurse to take charge of over twenty schools with the present conditions of transportation. It is therefore but natural that even with regard to medical supervision in country schools, special ways of doing it have to be discovered. In other words, experimentation is needed to ascertain the extent to which medical supervision may be carried out essentially by lay teachers, the only people available in rural conditions.

On account of the foregoing reasons we have conducted an experiment in rural school health education which may be described in the following order:

1. *Inspection of Schools.* Before introducing new things into a school, it is necessary to know about its general conditions. In our experiment here we first made a visit to the primary schools in the city and in the suburbs, and thus got acquainted with their principals and teachers. The latter's answers to certain specific questions helped to determine selection.

2. *Selection of Schools.* Out of the number of schools inspected we selected, on the basis of all available information, fourteen schools covering a school population of about 1,000 children. Then we tried to talk with the teachers and students in these schools on the importance of health protection and made some general suggestions.

3. *Conference.* Through further negotiations, a date was fixed on which the principals and teachers of the selected schools were assembled at a central place. In this conference, definite procedures to be carried out in their schools were described, and the amount of money needed, however small it might be, was reported for discussion. This conference and the experience gained later indicated that two things are necessary. One is the presence of some educational officials, and the other a meal for everybody present.

4. *Physical Examinations.* Physical examination in rural schools has several objectives. First, it is to create a new atmosphere in schools and in villages regarding care of the body. Second, it helps to arouse the interest, or rather curiosity, of the villagers in what a school may do with their children. Thus it enables the principal and the teacher to see many physical defects in their students that they could not see without the help of a physician. Fourth, it leads to correction of some outstanding defects of school children. Lastly, it gives a physician an unusual opportunity to teach teachers and children simple methods of protecting health.

The primary significance of a physical examination therefore lies in the very act itself, not in its completeness, which is usually impossible under rural conditions. Bearing these points in mind, we sent a physician to visit different schools at fixed dates, and finished the examination of about 1,000 school children in about ten days. The examination included the eyes for trachoma and other diseases, the ears for discharge and impaired hearing, the skin for ringworm of scalp, and the rest of the body, especially the hands and neck and the teeth, for cleanliness and caries. Special attention was given to trachoma and tinea of scalp. Trachoma, including doubtful cases, occurred in 75.6 per cent and ringworm of scalp in 19.9 per cent of the 1,255 children examined.

5. *Health Talks.* In order to avoid abruptness in introducing specific measures of health protection, it was deemed highly necessary to give one or two talks to the students about what school health work was. In fact, we gave demonstrations of school health procedures in the presence of the teacher and villagers. Following the talks, these children brought home interesting news to their parents, and this gave a chance for the conservative parents to show their reactions, favorable or otherwise, before the main program began.

6. *Beginning of the Main Program.* The program began with correction of two defects, trachoma and ringworm of scalp. A wooden box was prepared to contain only four drugs, 5 per cent copper citrate ointment, Whitfield ointment, tincture of iodine, and vaseline for trachoma, ringworm of scalp, superficial cuts and infection of skin, and preventing chilblain respectively. Each school bought a box at the cost of one dollar, and promised to pay about sixty cents to a dollar per year for the up-keep of its contents. A nurse visited each school once a week, and at each visit the nurse treated

	1932 (MARCH-AUGUST)		1933 (MARCH-SEPTEMBER)	
	Cases Treated	Cases Cured or Much Improved	Cases Treated	Cases Cured or Much Improved
Trachoma	474	153 (32.4%)	529	279 (52.7%)
Tinea of scalp	143	73 (51.1%)	66	51 (77.3%)

Table 1. Correction of defects.

the children's conditions by the use of the box. Thereby the teacher learned how to give simple treatments himself. Some teachers began to give these simple treatments after the second or third visit of the nurses. This seemed to be the only way of training teachers in using the box effectively.

7. *The Program.* Through the cooperation of the nurse and teachers, it was possible to demonstrate to the lay public in a period of two to three months the usefulness of the work by an appreciable decrease of diseased children with trachoma and ringworm of scalp. As soon as the effect was well demonstrated, the teachers became proud of keeping up the treatments as a routine, and they no longer received objection from the parents of some children. Table I indicates the effectiveness of treating trachoma and ringworm of scalp in the hands of teachers in Ting Hsien schools.

Table 2. Response to treatment of trachoma.

SEVERITY OF CASES	CASES TREATED (March, 1933)	CASES CURED OR MUCH IMPROVED (August, 1933)	IMPROVEMENT IN PERCENTAGE OF CASES TREATED
Slight papillary hypertrophy	292	146	49.9
Moderate papillary hypertrophy and for follicles	188	83	44.1
Highly advanced papillary hypertrophy and complication from cornea or eyelids	58	21	36.2

A more detailed analysis of the results from treatment of trachoma in the period of 1933 is shown in Table 2.

It is quite clear that the milder the cases, the better the

Table 3. Number of treatments necessary for clinical cure of trachoma and ringworm of scalp.

Number Treatments	Cases Trachoma Clinically Cured	Cases Tinea of Scalp Clinically Cured
10-20	23	8
20-30	10	1
30-40	14	6
40-50	17	—
50-60	6	1
60-70	14	2
80-90	3	—
90-100 and over	2	1
Total	89	19

response to the treatments in the hands of teachers.

In attempting to ascertain the number of treatments needed for clinical cure of these two defects, we followed 108 moderately severe cases rather carefully by frequent examinations. The results are given in Table 3.

It is interesting to notice that apparently most of the cases of trachoma and ringworm of scalp as found in the rural schools here do not need more than fifty treatments.

As soon as the favorable effect of treating trachoma and ringworm of scalp was made evident, organization of a health corps in each school was introduced. The corps' regulations are as follows:

Objectives

1. To improve cleanliness of the school, individual and environmental
2. To promote practice of health habits

Organization

1. The corps shall have a commander and a lieutenant-commander to be elected from the third and fourth grades, a lieutenant-secretary, and a number of lieutenants (one for each five members)

2. The tenure of office shall be one year and annual election shall take place each autumn
3. The classroom teacher and the visiting nurse shall be advisors to the corps
4. The duties of the officers shall be separately outlined

The first function of the corps was to perform cleanliness inspection every day. A lieutenant examines his five subordinates and reports to the commander. The commander examines the lieutenant and lieutenant-secretary. The inspection is graded according to the arbitrary standards for the present time, as follows:

- A. Circumoral region + fingers and nails + face *clean*
- B. Circumoral region + fingers and nails *clean*
- C. Circumoral region *clean*

At each inspection the grades are recorded in a printed form, and the latter is constantly hung in the classroom. In our schools here the improvement of personal cleanliness generally became obvious in a short time and statistically we may show the improvement in percentage of A, B, and C, in Table 4.

This table brings out quite a few interesting points. First, in corresponding months of two years, the standard of cleanliness in 1933 is considerably higher than that of the previous year. Second, it is shown here that cleanliness inspection performed by students themselves is an effective educational

Table 4. Improvement of cleanliness.

	A		B		C	
	1932 Per Cent	1933 Per Cent	1932 Per Cent	1933 Per Cent	1932 Per Cent	1933 Per Cent
April	27.2	44.3	54.4	47.4	18.4	8.3
May	37.3	48.3	51.5	42.0	11.7	9.7
June	36.9	53.7	50.7	38.6	12.4	7.7
July	31.8	52.6	56.8	39.7	11.4	7.7
August	36.4	56.7	51.0	38.1	12.6	5.2

measure. Third, the arbitrary standards as set up are satisfactory for children in the country schools here, because after two years about 5 per cent still remain in the C group. In other words, in the period of time for which most children can afford to study, over 50 per cent of them have shown some effort to become cleaner than before. Lastly, apparently the differences in economic status of the children set some natural limits to individual standards of cleanliness beyond which education alone cannot accomplish much.

In addition to cleanliness inspection, the health corps had also other functions such as maintaining the cleanliness of the school premises and regular inspection of latrines. The results of these efforts have become very definite to an observer, but it is much harder to measure them in figures than those of personal cleanliness. A health corps in each school as a rule had a regular meeting each month and the members of the corps generally brought up questions of health for discussion. The records of these meetings were quite interesting. For illustration, let me quote three short passages from the original records of the health corps in a single-roomed school which is located about a mile from the east gate of the Tingsien City:

First Meeting of Health Corps.

Time: 4 p.m. November 11, 1932.

Commander Tien presides at the meeting.

Record taken by Wang.

1. Performance of general ceremony.
2. Discussions on fingernails. It was pointed out that the fingernails of the members of the Corps are too long, and the long nails are apt to carry dirt.

Resolved: From now on the lieutenants be responsible for warning those members who have long fingernails and all nails be cut short and kept clean in the near future.

Seventh Meeting.

Date (missing)

Discussion on an atomizer for spraying water on the ground before sweeping it. The instrument was broken and could not be used any more.

Resolved: The Commander be entrusted to report to the teacher and the latter in turn to the trustees of the schools that a new atomizer be bought in the near future so as to keep up cleanliness of the school premises.

Meeting of Health Corps. (Number missing)

Date: March 10, 1933.

Lieutenant-Commander Liu presides at the meeting.

Record taken by Chin.

Fifteen members present.

Lieutenant-Commander Liu says: "Commander Tien should preside today. But he is not able to come, so I have called the meeting. I feel much honored by your presence. Our school has paid attention to hygiene for a long time. We have obtained good results. I hope that in the future at each daily inspection for cleanliness we will be careful and strict. In case someone is found to have not washed his face or hands, please report to the teacher at once for punishment. Punishment of one will be a warning to the rest of us."

Incidentally, the training in student organization, group action, and mutual help also contributed greatly to the aid of general health education.

For classroom instruction, we have written two books of "Health Education Guide to Teachers," one for first grade, and the other for second grade. The reason we have laid special emphasis on the first two grades has been referred to. The first book takes cleanliness as its central objective, and the seventeen lessons in it are all written as stories. The titles of the lessons are as follows:

1. I like to be clean (on cleanliness of fingernails)
2. Take baths often
3. Keep nose and hands clean
4. Use handkerchief
5. Use individual basin and towels
6. Wash hair
7. Wash hands before meals
8. Eat regular meals
9. Chew food carefully
10. Drink plenty of water
11. Drink only boiled water
12. Use individual cup for drinking
13. Move bowels regularly
14. I love sunshine
15. I sleep with windows open
16. Prevent ringworm of scalp
17. Prevent serious disease (scarlet fever as illustration)

These lessons may be classified into three varieties. One kind is to be put into immediate practice such as "keep nose and hands clean;" another kind is to stimulate children's desire for better practice that may be possible for some children, such as "use handkerchief." The third is to cultivate a desirable attitude in health protection, such as "prevent ringworm of scalp." Each is correlated with a little drawing in which, unlike ordinary textbooks with pictures, children are provided with opportunities to take an active part. The second book is written with growth as its central objective. It is an activity program and is widely correlated with music, drawing, arithmetic, and letters. The lessons in it have the following titles:

1. Beauty of growth (correlation with drawing)
2. Measurement of growth (correlation with extracurricular activity)
3. Units of measurement (correlation with arithmetic)
4. Growth and posture (correlation with handwork)

5. Training in posture (correlation with physical education)
6. Vegetables
7. Vegetables (continued)
8. Vegetables (continued)
9. Bean products
10. Aesthetic aspect of growth (cleanliness)

Lessons in the second book do not strictly adhere to time limits. Generally it requires about twenty periods of thirty minutes to complete each lesson.

The two books give the basic amount of health training material that every teacher may use for children in the first and second grades. The work can be very cheaply done because textbooks for children are not needed. So far these books were well received by the teachers here, and for measurement of effectiveness of the health teaching, two methods have been used. One is a broad measurement of all school health work including health training, that is, measurement of absenteeism due to sickness, the other is strictly for measuring health knowledge. The results of both may be briefly given in Table 5.

In terms of percentage of absenteeism due to sickness and its various complaints, a distinct decrease has been demonstrated. This can hardly be explained without considering the probable influence of the health training work. Nine hundred

Table 5. Reduction of absenteeism.

	1932 (Control)	1933
Total days of investigation	146	170
Total absenteeism in days	3,408	1,374
Percentage of absenteeism due to sickness	45.5	15.9
Medical complaints of absenteeism sickness:		
Eye trouble (per cent)	29.2	21.0
Headache (per cent)	22.1	16.9
Skin disease (per cent)	16.2	8.7

and thirty-six children who have had over fifteen lessons and 534 children who have used textbooks published by commercial companies were tested with a set of twenty-five questions.

Table 6. Importance of adequate health education material.

Question	Per Cent of Correct Answers 534 Children (Control Group) ¹	Per Cent of Correct Answers 936 Children (Test Group) ²
1	19.5	79.0
2	34.3	97.0
3	28.3	99.0
4	31.5	88.7
5	34.3	99.0
6	34.6	99.6
7	33.2	98.9
8	32.8	98.0
9	51.1	83.0
10	68.0	88.9
11	66.7	92.5
12	81.6	98.5
13	58.2	85.0
14	34.5	99.0
15	35.2	99.0
16	35.4	98.8
17	32.8	98.9
18	87.8	95.0
19	60.9	91.9
20	54.9	98.7
21	97.0	99.0
22	56.6	98.7
23	81.3	91.7
24	81.5	91.8
25	8.6	71.1

¹Commercial textbooks used.

²Ting Hsien material used.

The results are quite interesting (Table 6).

This shows that as far as dissemination of essential health knowledge is concerned, our "Guides to Teachers" are much superior to those of the commercial texts in the rural schools. Similarly, a test of twenty questions was applied to two groups, one taught by the nurse and the other by classroom teachers. The results which are quite different are given in Table 7.

It seems clear that the same information in the hands of different persons produces different results. For the time being, the

nurse seems to work out better than the teachers, but the latter can also use the texts to a considerable degree of success.

Judging from the foregoing indications we now feel fairly sure that the procedures of approach to the country schools

in their health aspect and the methods we have evolved from experimentation are effective and practical under existing social and economic conditions. Before I conclude, I shall say a word more about supervision and rewards. At the present time, before local educational authorities take great interest in health education work, the supervision of a visiting nurse over teachers is indispensable. Furthermore, nurses, irrespective of the amount of professional training they may have, rarely know how to overcome present difficulties. A physician's supervision over them is quite necessary even in rural work, where medical supervision

Table 7. Difference in degree of success due to difference in teachers.

Question	Per Cent of Correct Answers Nurse (187 Students Tested)	Per Cent of Correct Answers Classroom Teacher (439 Students Tested)
1	100	52.9
2	100	74.7
3	98.4	55.4
4	99.5	74.7
5	98.4	40.6
6	100	56.7
7	100	53.3
8	99.5	37.8
9	97.9	41.5
10	99.5	44.9
11	98.4	34.9
12	100	76.8
13	100	52.4
14	98.9	48.3
15	99.5	53.3
16	100	57.9
17	94.5	51.0
18	100	52.6
19	99.5	50.1
20	100	49.7

plays only a small role. With regard to rewards to school or children, it is a very delicate question. In general, rewards to the school, not to the teacher, and rewards to the health corps, not to individual children, worked out satisfactorily in our experiment. Articles for reward should be useful in improving personal or community hygiene. For cleanliness, we use a star for A, a circle for B, and a cross for C, and individual praise should not go beyond what this kind of device gives.

The experiment as reported here, laying emphasis on education rather than on medical care, is inexpensive. Each school pays one dollar for a treatment box, thirty cents for two books of "Health Education Guide to Teachers," and one dollar per year for medical supplies and record forms. The Health Department pays \$240 for a nurse, and \$50⁰⁰/₁₀₀ for transportation and rewards to schools and health corps. In other words, this program costs less than 25 cents per child per year, and should prove economically practical in most of our country schools of today as a first step in health education.