Chapter Five
Summary, Conclusions
and Suggestions
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Introduction

Supervision is one of the most controversial yet important aspects of education with a long history. Almost in every country as soon as schools were established, some sort of check to keep up the efficiency at a reasonable level was considered necessary. In the course of time, it developed certain distinct features to suit the needs of the educational set-up in particular and of other aspects of public life in general.

In Thailand, the knowledge of supervision has been developed intensively for the last two decades. In 1971, Chulalongkorn was the first University that introduced supervision and curriculum development as a subject at M.Ed. level. At present, this subject is being taught there at Ph.D level. Recently supervision, as a subject has found an important place in the area of educational administration at M.Ed. and B.Ed. levels in every university and Teachers' Colleges in Thailand. Supervision is also added in the in-service training courses of the school administrators and the concerned
key persons. Consequently, there has been a gradual evolution of the concept of supervision in theory and practice.

Supervision is conceived as a service to the teacher both as an individual and in a group. Leadership, human relationship, and group process have been established and maintained through supervisory programmes for improving all factors involved in pupil learning. Nowadays, supervision is an important part of the national education system. Ministry of education contributes to the supervisory programmes in schools. Individualized supervision has been organized at all levels from kindergarten to higher secondary schools. Supervision in Thailand has been rapidly advanced in the past few years.

In accordance with the policy of the Ministry of Education, the Department of General Education strongly emphasized on improving the students' learning by improving the instruction of the teachers. For establishing the goal, the secondary school teachers are encouraged to use clinical supervision for the instructional improvement. At present, the teachers get acquainted with the concept and method of clinical
supervision, but there are few clinical supervision practices in secondary schools. Also, few research studies about clinical supervision are conducted.

The present research was conducted keeping in view the recent trends of the development of supervision in the country.

Objectives of the Study

The study was carried out with the following major objectives.

1. To study the effect of clinical supervision, intelligence, and self-concept on teacher effectiveness.
2. To see the concordance between the ratings given by supervisors (heads) and the self-ratings of the teachers on teacher effectiveness.
2.1 To see the differences in the improvement of teaching of Thai language, social studies, and science subject.
3. To study the effect of clinical supervision on academic achievement of the students.
3.1 To study whether or not there was any improvement in the semester-end academic performance of the students studying different subjects i.e., Thai.
language, social studies, and science subject after the experiment of clinical supervision of the teachers was over.

4. To evaluate teaching behaviour of the teachers in the class-room.

Another objective of the study was to construct and standardize a scale to measure teacher effectiveness as considered essential for the study by the investigator.

Hypotheses of the Study

Based on the above objectives, following hypotheses were launched:

1. Teacher effectiveness improves as a result of clinical supervision.

1.1 Teacher effectiveness is a function of intelligence and self-concept i.e. teachers with high intelligence and high self-concept have higher effectiveness in teaching.

2. No significant differences exist between the self-ratings of teachers and ratings of supervisors (heads) on teacher effectiveness.
2.1 Teachers teaching different subjects i.e. Thai language, social studies, and science responded differently to clinical supervision.

3. Academic achievement of the students improves significantly as a result of clinical supervision of the teachers.

3.1 There exist significant differences in the improvement of academic achievement of students studying Thai language, social studies, and science subject.

4. Clinical supervision has a positive effect on the improvement of teaching behaviour of the teachers.

4.1 Clinical supervision has differential effect on the teaching behaviour of the teachers of different subjects.

Design of the Study

The method used to conduct the present study was an experimental one that involve the pre-test-post-test control group design. The main objective was to study the effect of clinical supervision, intelligence, and self-concept on teacher effectiveness.
There were two groups in this design, one the experimental group, which received the treatment i.e. clinical supervision, while the second group i.e. the control group or non-clinical group did not receive the treatment. Both groups were given Teacher Effectiveness Scale as a pre-test and the post-test. This design of the experiment was used mainly to establish causal-effect relationship between clinical supervision and teacher effectiveness. In addition to that, a 2x2 factorial design was used coupled with analysis of covariance (the covariate being the pre-test scores on the Teacher Effectiveness Scale) to see the effect of intelligence and self-concept on teacher effectiveness.

The Sample for the Study

Various objectives of the study, demanded samples which involved different techniques of sampling.

1. The Sample for the Development and Standardization of Teacher Effectiveness Scale (TES)

It consisted of the entire population of 76 teachers teaching Thai language, social studies, and science at level 3,4, and 5 from the four selected secondary schools where the experiment was conducted.
But only 50 out of 76 response sheets which were complete in every respect were used for item analysis.

2. The Sample for Reliability and Validity of the Test

For this purpose, a fresh sample of 36 secondary school teachers in Thailand and 36 government and private school teachers in India, were taken for establishing the test-retest reliability of TES. And the same 36 secondary school teachers in Thailand provided data for establishing the validity of the TES. The technique of sampling used for establishing reliability and validity was incidental in nature.

3. The Sample for the Major Study

It involves mainly the techniques of the purposive coupled with stratified sampling. The total sample was taken from 8 higher secondary schools. In each school at each of level 3, 4 and 5, one teacher in each subject area was selected. Thus the data were provided by 72 teachers (8x3x3x3).
Likewise, there was one head of the department in each subject area in each school, thus the number of heads was 24 (8x3). From each school, from each of the levels 3, 4, 5, one section in each level was taken. Since the number of students in the sections in each school varied from level to level, the sample size could not be equal. The total number of students was 933. The sample was stratified with respect to the level and section in the school. It was purposive in the sense that only those schools which joined the project of individualized supervision were taken for the study.

Tools Used for the Study

1. Teacher Effectiveness Scale (TES)

The TES developed by the investigator has 11 categories. These are: planning and mastery of the subject matter (PM), method of teaching (MT), rewards and punishment (RP), motivation to facilitate learning experience (MLE), evaluation (EV), class-room organization-class-room climate (COCL), attitude towards students (ATS), inter-personal relationship with colleagues, with parents (IPR), attitude towards profession (ATP), job satisfaction (JS), and motivation
for personal and professional growth (MPG).

TES is Likert-type five-point rating scale which has 70 statements. The test-retest reliability coefficients for the sub-categories of TES ranged from .59 to .91 on Thai sample, and from .55 to .91 on Indian sample and for the total test score of TES, the test-retest reliability was .96 for Thai sample and .81 for Indian sample. The convergent validity of the scale prepared by the investigator was correlated with TES by Kumar and Mutha (1973), and the validity coefficient was .72.

2. A Check-list to observed Teacher's Performance in the Classroom (CPC)

The CPC was adopted from Oliva's Check-list on Lesson presentation and Flanders's Interaction Analysis Categories (FIAC), It is a three-point rating scale which has 43 items with 8 sub-categories. It was used as the classroom observation tool for the supervisor to observed the teacher's performance.
3. Advanced Progressive Matrices (APM), Set I and Set II (Raven's 1962)

The APM was used as a measure of general intelligence. The test portrays a person's capacity to apprehend meaningless abstract figures. The APM Set I and Set II has a test-retest reliability of .91 among adults of above average intellectual capacity.


The PWL was employed to measure self-concept of the teachers as perceived by themselves. It is a self-rating five-point scale, consisting of 90 adjectives of everyday use. The test-retest reliability coefficient of PWL is .867 and the convergent validity is .695.

5. Standardized Achievement Test

The Standardized Achievement Test was used to measure the students' performance in 3 subject areas i.e. Thai language, social studies, and science subject. This was used at all levels of 3, 4, and 5. The tests were constructed by the Bureau of Test-Item, Educational Technique Department, Ministry of Education, Thailand. Those objective type tests enable to assess the
students' knowledge gained during the semester.

Statistical Techniques Used

In accordance with the objectives and nature of the study, various statistical techniques were used to analyse the data:

For the development and standardization of the teacher effectiveness, the statistical techniques used were: correlations, alpha coefficients, upper-lower index (ULI), and t-ratios.

For the analysis of the experimental data, analysis of covariance, analysis of variance, and t-ratios were used.

The results were obtained from PE MODEL 3230 of the Computer Center of Srinakharinwirot University in Thailand in case of the development and standardization of Teacher Effectiveness Scale.

For the major study, the results were obtained from UNICOMP PC-XT of the Computer Centre, Panjab University, Chandigarh, India. A part of the calculations was done manually.
Main Findings of The Experiment

The main objective of the experiment was to study the effect of clinical supervision on teacher effectiveness in relation to intelligence and self-concept.

Accordingly, the effect of clinical supervision was studied from various angles:

I. The effectiveness based on teachers' self-ratings.

II. The effectiveness as observed by the heads of the departments in the respective subject areas.

III. The effectiveness (indirectly) on the basis of the improvement in students' achievement as a result of clinical supervision.

The main findings are presented in sequential order of hypotheses tested for the study.
First Hypothesis

Teacher effectiveness improves as result of clinical supervision.

1.1 Teacher effectiveness is a function of intelligence and self-concept i.e. the teachers with high intelligence and high self-concept have high performance on teacher effectiveness.

Based on the above objectives, in order to test the hypothesis related to intelligence and self-concept on the improvement of teacher effectiveness as a result of clinical supervision, t-ratios, analysis of covariance, and analysis of variance were employed. The findings are:

I. Effect of Clinical Supervision on the Basis of Self-ratings of Teacher Effectiveness

Comparison of experimental and control groups (pre-test-post-test difference scores)

1) Thai language vide Table 4.A.5

The results of t-ratios revealed that differences were found in favour of experimental group of teachers teaching Thai language on variables of method of
teaching (t=3.06, sig. at .01); rewards and punishment (t=3.74, sig. at .01); evaluation (t=3.54, sig. at .01); class-room organization-class-room climate (t=2.46, sig. at .05); motivation for personal and professional growth (t=4.42, sig. at .01); and on the total scores of teachers effectiveness (t=4.60, sig. at .01).

2) Social studies vide Table 4.A.6

In case of social studies teachers, significant differences were found in favour of experimental group of teachers on the variables of motivation to facilitate learnings experience (t=2.10, sig. at .05); class-room organization-class-room climate (t=2.59, sig. at .05); and attitude towards profession (t=3.19, sig. at .01).

3) Science subject Vide Table 4.A.7

In case of science teachers, differences were found in favour of experimental group of teachers on the variables of planning and mastery of the subject matter (t=2.67, sig. at .05); method of teaching (t=2.15, sig. at .05), rewards and punishment (t=3.14, sig. at .01); motivation to facilitate learning experience (t=3.07, sig. at .01); class-room organization-class-room climate
(t=2.48, sig. at .05); attitude towards profession (t=2.23, sig. at .05); job satisfaction (t=2.93, sig. at .01); motivation for personal and professional growth (t=2.24, sig. at .05); and the total score of teacher effectiveness (t=3.73, sig. at .01).

4) Combined group of teachers vide Table 4.A.8

When the teachers in three subject areas were combined, differences were found in favour of experimental group of teachers on the variables of method of teaching (t=2.68, sig. at .01); rewards and punishment (t=4.20, sig. at .01); motivation to facilitate learning experience (t=3.29, sig. at .01); evaluation (t=2.77, sig. at .01); class-room organization-class-room climate (t=4.31, sig. at .01); attitude towards profession (t=3.59, sig. at .01); job satisfaction (t=2.86 sig. at .01); motivation for personal and professional growth (t=3.76, sig. at .01); and the total score of teacher effectiveness (t=5.33, sig. at .01).

The common patterns of improvement in teacher effectiveness as a result of clinical supervision were found in case of class-room organization-class-room
climate in all the three subjects of experimental group.

II. Effect of Clinical Supervision on the Basis of Heads' Ratings of Teacher Effectiveness

1) Thai language vide Table 4.A.13

The results of t-ratios comparing between experimental and control group of subjects revealed significant differences in favour of Thai language teachers on the variables of planning and mastery of the subject matter (t=3.87, sig. at .01); method of teaching (t=5.47, sig. at .01); rewards and punishment (t=4.52, sig. at .01); evaluation (t=2.22, sig. at .05); classroom organization-classroom climate (t=2.20, sig. at .05); attitude towards students (t=3.86, sig. at .01); and the total score of teacher effectiveness (t=3.23, sig. at .01).

2) Social studies vide Table 4.A.14

In case of social studies teachers, significant differences were found in favour of experimental group of teachers only on the variables of method of teaching (t=2.75, sig. at .05) and motivation to facilitate learning experience (t=2.90, sig. at .01).
3) Science subject *vide* Table 4.A.15

In case of science teachers, significant differences were found in favour of experimental group of teachers only on variables of method of teaching ($t=3.28$, sig. at .01) and attitude towards students ($t=2.44$, sig. at .05).

4) Combined teachers *vide* Table 4.A.16

When the teachers in three subject areas were combined, significant differences were found in favour of experimental group of teachers on the variables of planning and mastery of the subject matter ($t=2.74$, sig. at .01); method of teaching ($t=6.42$, sig. at .01); rewards and punishment ($t=3.86$, sig. at .01); motivation to facilitate learning experience ($t=2.83$, sig. at .01); evaluation ($t=2.18$, sig. at .05); class-room organization-class-room climate ($t=2.24$, sig. at .05); attitude towards students ($t=2.03$, sig. at .05); attitude towards profession ($t=2.11$, sig. at .05); and total score of teacher effectiveness ($t=4.07$, sig. at .01).
III. Effect of Clinical Supervision on Teacher Effectiveness on the Basis of Analysis of Covariance (Combined Group of Teachers)

In the analysis of covariance, the pre-test scores on teacher effectiveness \( X \) were taken as a covariate with the view to study effect of clinical supervision on teacher effectiveness in favour of experimental group exclusively free of initial differences. The covariance was done separately for the ratings obtained from the teachers themselves as well as on the ratings of the heads of subject areas on teacher effectiveness. The findings are:

Teachers' Ratings on Teacher Effectiveness vide Table 4.B.1, 4.B.2

a) The F ratio for the pre-test \( X \) scores \( (F = 1.05) \) did not show significant differences at any level. This means that both the experimental and control group of subjects were at par with each other on teacher effectiveness at the onset of the experiment. After the clinical supervision was over, the F-ratio showed significant differences in favour of experimental group of teachers \( (F = 775.81, \text{ sig. at } .01) \).
Heads' Ratings on Teacher Effectiveness vide Table 4.B.4, 4. B.5

b) The F-ratio for the pre-test (X) scores (F = 0.13) did not show significant differences at any level. This means that the heads of the department rated both experimental and control group of teachers on teacher effectiveness at equal level at the onset of the experiment. After the clinical supervision was over, the F-ratio showed significant differences in favour of experimental group of teachers (F = 17.17, sig. at .01).

Clearly according to the heads of the department, the experimental group of teachers were affected significantly by clinical supervision on teachers' efficiency.

The results of analysis of covariance obtained separately for the teachers and heads of the departments, give full support to the hypothesis that teacher effectiveness improves as a result of clinical supervision. This is also proved by the results obtained with t-ratios vide Table 4.A.5 through 4.A.8, and 4.A.13 through 4.A.16. Both analyses of covariance and t-ratios supported the hypothesis fully.
IV Effect of Intelligence and Self-concept on Teacher Effectiveness vide Table 4.C.1, 4.C.2

Analysis of variance revealed that the main effect due to intelligence and self-concept, and the interaction between intelligence and self-concept was not significant both in case of experimental and control groups. As far as the level of intelligence and self-concept is concerned, both groups of teachers were equal to each other. The results indicate the fact that the teachers with high level of intelligence and self-concept do not have high level of teacher effectiveness. Intelligence and self-concept did not have any effect on teacher effectiveness. Hence, the hypothesis (1.1): teacher effectiveness is a function of intelligence and self-concept is not accepted in this study.

Second Hypothesis

No significant differences exist between the self-ratings of teachers and ratings of supervisors (heads) on teacher effectiveness.
V Comparison between Teachers' and Heads' Ratings on the Pre-test and Post-test Scores on Teacher Effectiveness of Thai language Social studies, and science subject vide Table 4.D.1 and 4.D.2

a) The t-ratios comparing the ratings of teachers and heads on pre-test scores revealed that, no differences were found in any group of subject i.e. Thai language, social studies, and science teachers.

b) The t-ratios comparing between ratings of teachers and heads on post-test scores show that, no differences existed in any group of subjects.

The non-significant t-ratios show that ratings of teachers and heads on teacher effectiveness are in congruent with one another. These findings support the hypothesis i.e. no significant differences exist between the self-ratings of teachers and ratings of supervisors (heads) on teacher effectiveness.

Hypothesis 2.1

Teachers teaching different subjects i.e. Thai language, social studies, and science respond differently to clinical supervision.
VI. Comparison of the Effect of Clinical Supervision on the Improvement of the Teachers Teaching Thai language, Social studies, and Science subject on Pre-test-Post-test Differences Scores on Teacher Effectiveness vide Table 4.D.3

In order to see which group of teachers gained more as a result of clinical supervision, the comparison of the teacher teaching different subject was done separately on the basis of teachers' and heads' ratings on teacher effectiveness. The results are:

1. The t-ratios comparing between ratings of teachers and heads of department revealed significant differences in favour of teachers' self ratings in science subject only (t=2.29, sig. at .05).

2. The t-ratios in case of teachers' ratings revealed significant differences in favour of science subject in comparison to social studies teachers (t=2.93, sig. at .01).

3. In case of the heads' ratings, the t-ratios were found to be significant in favour of Thai language when the teachers compared to social studies teachers (t=2.85, sig. at .01). And when the teachers of Thai language were compared with those of the science subject, the t-ratios were found to be in favour of the
The results of t-ratios revealed that, the Thai language teachers showed more improvement on teacher effectiveness than the social studies and the science teachers, and likewise the science teachers showed more improvement on teacher effectiveness than the social studies teachers. This gave a substantial support to the hypothesis of significant differences on teacher effectiveness in case Thai language, social studies, and science teachers.

Third Hypothesis

Academic achievement of the students improves significantly as result of clinical supervision.

VII. Effect of Clinical Supervision on Academic Achievement of the Students vide Table 4.2.1

a. Comparison of experimental and control group of students level III

The t-ratios were found to have significant differences in favour of the control group of students on academic achievement scores of Thai language (t=1.96, sig. at .03), on academic achievement scores of social
studies, science subject and total score of combined group of subjects, the t-ratios were not found to be significant in both the experimental and control group of students at level III.

b. Comparison of experimental and control group of students at level IV

The t-ratios were found to have significant differences in favour of the experimental group of students on achievement scores of Thai language (t=7.85, sig. at .01), social studies (t=11.50, sig. at .01), science subject (t=5.89, sig. at .01), and total score of combined subject (t=14.08, sig. at .01).

c. Comparison of experimental and control group of students at level V

The t-ratios were found to have significant differences in favour of the experimental group of students on academic achievement scores of Thai language (t=8.35, sig. at .01), social studies (t=12.71, sig. at .01), science subject (t=6.93, sig. at .01), and total score of combined subject (t=15.71, sig. at .01).
d. Comparison of experimental and control group of students combined at level III, IV, and V

The t-ratios were found to have significant differences in favour of the experimental group of students on academic achievement scores of Thai language (t=6.44, sig. at .01), social studies (t=10.65, sig. at .01), science subject (t=7.44, sig. at .01), and total score of combined subject (t=13.09, sig at .01).

The results represent the fact that the students at level III did not show any improvement in their academic achievement in any subject viz. Thai language, social studies, and in science.

At level IV and V, the experimental group showed improvement in their academic achievement in all the three subjects and on total achievement score.

When the students at all the three levels were combined, the experimental group of students showed marked improvement on academic achievement in every subject as well as on total achievement score. The improvement on academic achievement of the experimental group of students may be due to the improvement of the teachers' behaviour as a result of clinical supervision. The results, therefore, support the hypothesis.
Hypothesis 3.1

There exist significant differences in the improvement of academic achievement of students studying Thai language, social studies, and science.

VIII. Effect of Clinical Supervision on the Improvement of Academic Achievement of the Students Studying Thai language, Social studies, and Science subject: Subject-wise Comparison of Pre-test-Post-test Difference Scores of Students at Three Levels Combined vide Table 4.2.2

The t-ratios were found to be significant in favour of social studies when compared with Thai language (t=11.69, sig. at .01). When the achievement scores of Thai language and science subject were compared, significant differences were found in favour of science subject (t=14.56, sig. at .01). Comparing the achievement scores of social studies and science, significant differences were found in favour of science subject (t=3.59, sig. at .01).

The results revealed that after clinical supervision, the students (at all levels combined) seemed to have shown improvement on academic achievement in science subject more than in social studies and in Thai language. These findings support the hypothesis of
significant differences on the improvement of academic achievement of the students studying Thai language, social studies, and science subject.

Fourth Hypothesis: Analysis of Class-room Teaching Behaviour

Clinical supervision has a positive effect on the improvement of teaching behaviour of the teachers which is a direct evidence of teacher effectiveness.

IX. Effect of Clinical Supervision on the Improvement of Teaching Behaviours of Teachers in the Class-room

a. Improvement on the class-room teaching behaviour on the basis of 1st and 2nd, 1st and 3rd, and 2nd and 3rd observation of the teachers teaching Thai language by the heads of the department vide Table 4.3.1

On overall class-room teaching behaviour, the t-ratios showed significant differences on 1st and 3rd observation \(t=3.46,\) sig. at .01) and on 2nd and 3rd observation \(t=4.84,\) sig. at .01).

On the basis of the sub-categories of class-room teaching behaviour, the t-ratios showed differences on planning and preparation on 1st and 3rd observation \(t=2.93,\) sig. at .01) and on 2nd and 3rd observation
(t=4.30, sig. at .01); on presentation on 1st and 3rd observation (t=2.68, sig. at .05) and on 2nd and 3rd observation (t=3.13, sig. at .01); on pupil-teacher interaction on 1st and 3rd observation (t=2.68, sig. at .05); on questioning, direction, and criticism on 1st and 3rd observation (t=2.45, sig. at .05) and 2nd and 3rd observation (t=3.26, sig. at .01); on feedback and evaluation on 2nd and 3rd observation (t=3.19, sig. at .01).

b. Improvement on the class-room teaching behaviour on the basis of 1st and 2nd, 1st and 3rd, and 2nd and 3rd observation of the teachers teaching social studies vide Table 4.3.2

On overall class-room teaching behaviours, significant differences were found on 1st and 2nd observation (t=3.71, sig. at .01), on 1st and 3rd observation (t=5.17, sig. at .01), and on 2nd and 3rd observation (t=7.46, sig. at .01).

On broad categories of class-room teaching behaviour, t-ratios showed significant differences on planning and preparation on 1st and 3rd observation (t=2.79, sig. at .05) and on 2nd and 3rd observation (t=2.91, sig. at .01); on presentation, on 1st and 2nd
observation (t=2.62, sig. at .05), on 1st and 3rd observation (t=3.80, sig. at .01), and on 2nd and 3rd observation (t=2.49, sig. at .05); pupil-teacher interaction on 1st and 2nd observation (t=2.20, sig. at .05) and on 1st and 3rd observation (t=2.42, sig. at .05); questioning, direction, and criticism on 1st and 2nd observation (t=3.63, sig. at .01), on 1st and 3rd observation (t=5.61, sig. at .01), and on 2nd and 3rd observation (t=3.15, sig. at .01); students's response on 1st and 3rd observation (t=4.55, sig. at .01) and on 2nd and 3rd observation (t=4.61, sig. at .01); classroom climate on 1st and 2nd observation (t=2.28, sig. at .05) and on 1st and 3rd observation (t=4.49, sig. at .01); student's activity on 1st and 2nd observation (t=3.09, sig. at .01) and on 1st and 3rd observation (t=4.17, sig. at .01). Feedback and evaluation on 1st and 2nd observation (t=3.07, sig. at .01) and on 1st and 3rd observation (t=3.44, sig. at .01).

c. Improvement on the class-room teaching behaviour on the basis of 1st and 2nd, 1st and 3rd, and 2nd and 3rd observation of the teachers teaching science subject vide Table 4.3.3

On overall class-room teaching behaviour, significant differences were observed on 1st and 2nd
observation \( (t=6.41, \text{ sig. at .01}) \), on 1st and 3rd observation \( (t=6.88, \text{ sig at .01}) \), and on 2nd and 3rd observation \( (t=4.45, \text{ sig. at .01}) \).

On broad categories of class-room teaching behaviour, t-ratios showed significant differences on planning and preparation on 1st and 2nd observation \( (t=4.88, \text{ sig. at .01}) \), on 1st and 2nd observation \( (t=6.33, \text{ sig. at .01}) \), and on 2nd and 3rd observation \( (t=3.00, \text{ sig. at .01}) \); presentation on 1st and 2nd observation \( (t=4.55, \text{ sig. at .01}) \), on 1st and 3rd observation \( (t=4.74, \text{ sig. at .01}) \), and on 2nd and 3rd observation \( (t=2.84, \text{ sig. at .01}) \); pupil-teacher interaction on 1st and 2nd observation \( (t=3.25, \text{ sig. at .01}) \), on 1st and 3rd observation \( (t=6.97, \text{ sig. at .01}) \), and on 2nd and 3rd observation \( (t=2.39, \text{ sig. at .01}) \); questioning, direction, and criticism on 1st and 2nd observation \( (t=4.06, \text{ sig. at .01}) \), on 1st and 3rd observation \( (t=5.60, \text{ sig. at .01}) \), and on 2nd and 3rd observation \( (t=2.83, \text{ sig. at .01}) \); student's response on 1st and 3rd observation \( (t=3.68, \text{ sig. at .01}) \) and on 2nd and 3rd observation \( (t=3.37, \text{ sig. at .01}) \); class-room climate on 1st and 2nd observation \( (t=4.17, \text{ sig. at .01}) \) and on 1st and 3rd observation \( (t=3.36, \text{ sig. at .01}) \); student's activity on 1st and 2nd observation \( (t=3.53, \text{ sig. at .01}) \).
d. Comparison of 1st and 2nd, 1st and 3rd, and 2nd and 3rd observation of combined teachers teaching in three subject areas vide Table 4.3.4

On overall class-room teaching behaviour, the t-ratios showed significant differences on 1st and 2nd observation (t=4.65, sig. at .01), on 1st and 3rd observation (t=8.08, sig. at .01), and on 2nd and 3rd observation (t=8.93, sig. at .01).

On broad categories of class-room teaching behaviour, the t-ratios showed significant differences on planning and preparation on 1st and 2nd observation (t=2.13, sig. at .05), on 1st and 3rd observation (t=6.07, sig. at .01), and on 2nd and 3rd observation (t=5.97, sig. at .01); presentation on 1st and 2nd observation (t=2.99, sig. at .01), on 1st and 3rd observation (t=6.40, sig. at .01), and on 2nd and 3rd observation (t=4.93, sig. at .01); pupil-teacher interaction on 1st and 2nd observation (t=3.85, sig.
at .01), on 1st and 3rd observation (t=5.31, sig at .01), and on 2nd and 3rd observation (t=2.32, sig. at .05); questioning, direction, and criticism om 1st and 2nd observation (t=4.01, sig. at .01), on 1st and 3rd observation (t=7.29, sig. at .01), and on 2nd and 3rd observation (t=5.39, sig. at .01); student's response on 1st and 3rd observation (t=5.79, sig. at .01) and on 2nd and 3rd observation (t=5.63, sig. at .01); class-room climate on 1st and 2nd observation (t=3.25, sig. at .01) and on 1st and 3rd observation (t=3.81, sig. at .01); student's activity on 1st and 2nd observation (t=3.95, sig. at .01), on 1st and 3rd observation (t=5.16, sig. at .01), and on 2nd and 3rd observation (t=2.12, sig. at .05), feedback and evaluation on 1st and 2nd observation (t=2.90, sig. at .01); on 1st and 3rd observation (t=4.84, sig. at .01), and on 2nd and 3rd observation (t=4.28, sig. at .01).

The results of the observation of the heads on the teaching behaviour of teachers of Thai language, social studies, and science, during the clinical supervision, revealed that these teachers showed an overall improvement in teaching behaviour as well as on each category of class-room teaching behaviour.
The results proved the hypothesis that clinical supervision has positive effect on the improvement of teaching behaviour which is a direct evidence of teacher effectiveness.

Hypothesis No. 4.1

There are significant differences in the effect of clinical supervision on the teaching behaviour of different subject groups.

X. Comparison of Class-room Teaching Behaviour of the Teachers Teaching Different Subjects on the Basis of 1st, 2nd, and 3rd Observation as rated by the Heads of Department

a. Comparison of Thai language and social studies teachers vide 4.3.5 through 4.3.7

The t-ratios revealed improvement of teaching behaviour with significant differences in favour of Thai language teachers on the categories of planning and preparation (t=2.20, sig. at .05); presentation (t=2.69, sig. at .05); questioning, direction, and criticism (t=2.88, sig. at .01); student's activity (t=2.08, sig. at .05); feedback and evaluation (t=3.19, sig. at .01); and on overall class-room teaching behaviour (t=3.50 sig. at
b. Comparison of Thai language and science teachers 

Significant differences were found in favour of Thai language teachers on planning and preparation (t=2.66, sig. at .05); feedback and evaluation (t=2.12, sig. at .05); and on overall classroom teaching behaviour (t=2.48, sig. at .05) only in the first observation.

c. Comparison of social studies and science teachers

No significant differences were seen on any category of classroom teaching behaviour and on any observation.

In order to see which group of teachers teaching Thai language, social studies, and science subject showed more improvement in the classroom teaching behaviour from first to second to third observation, significant differences were found only in the first observation when Thai language and social studies teachers were compared. In subsequent observation, no such differences were found.
These findings gave a partial support to the hypothesis that clinical supervision has differential effect on different subject groups.

The overall conclusions of the experiment that clinical supervision has a direct and positive effect on the teacher effectiveness, as indicated by the improvement in teacher effectiveness, in the students' academic achievement as well as the improvement of class-room teaching behaviour of the teachers.

Educational Implications and Suggestion for Further Research

The effect of clinical supervision on class-room teaching behaviour of the teachers, which was evident in this experiment, provides a great insight in to the teaching-learning situation.

Supervision is seen as sub-function of administration (Jones et al., 1969) with a purpose to help those who are working at the class-room level, that is the teachers. The goal of clinical supervision is to help teachers perform their job better (Goldhammer et al., 1980). The basic function of supervision is to improve the learning situation for children.
As such, the instructional improvement may be considered as the outcome of the clinical supervision which involves the class-room teaching behaviours of the teachers.

The responsibility for the improvement of any given school's programme lies with the principal. In Thailand most of the secondary school principals believe that the instructional programme within their schools can be improved. Others share this responsibility with the principal. As such, the principal can put strong emphasis on clinical supervision by providing in-service training course on clinical supervision for the teachers and other school personnel. It will enable the teachers to understand the concept of clinical supervision. It creates self-awareness and bring about the desireable attitudinal changes in the teachers and improvement in the learning situation for students.

The heads of the department can assume the role of school supervisors, not only by providing supervisory activities but also by establishing rapport with the teachers, and by motivating them for their professional growth. In practice, heads of the department may follow the cycle or pattern of supervision as pioneered
by Anderson, Cogan, Goldhammer, etc. It involves the conference, class-room observation, analysis, and feedback, to accomplish the goal of instructional improvement. The supervision in the class-room may be treated as distinct from general supervision.

But the supervisor from outside the school must have an advanced knowledge of the concept and method of instructional supervision because on the basis of the model of clinical supervision, the supervisor has to apply a variety of knowledge and techniques of psychology, human relationship, leadership, communication, class-room observation, and evaluation in order to help the teacher to improve his teaching behaviour.

The roles of the teachers are changing rapidly. Technology and other media will enable the teachers to do a much better job in guiding the learning process. Particularly, if the teachers are interested in improving class-room instruction, they must be interested in clinical supervision and work with the supervisor on trust through the setting of mutual goals and objectives to improve the instruction and learning of the students. Teachers with strong needs for
achievement (n Ach), have much to contribute to school effectiveness. Teachers need to evaluate themselves for improving instruction growth.

Any improvement in the instructional behaviour of the teacher brings about a definite change in the learning patterns of the students.

Institution of education like Faculty of Education and Teacher's College also should take responsibility for improvement of instruction. Clinical supervision can be added in the curriculum as a special subject. This opportunity will help prospective teachers to motivate themselves for improvement and work for professional growth.

Suggestion for Further Research

In the present study, a large number of sample was taken representing 8 higher secondary schools, 72 teachers, 24 heads of the departments, 24 sections of the students in 3 levels as III, IV and V, and 3 subject areas viz. Thai language, social studies, and science subject. Many variables were studied, and many techniques were employed to analyse the results and to test various hypotheses. Keeping the complexity of the
test various hypotheses. Keeping the complexity of the design in view and making it still more comprehensive in the area of instructional supervision research, a few suggestions are given here:

1) In addition to the study of the effect of clinical supervision on teacher effectiveness of secondary school teachers of Thai language, social studies, and science subject, it could be studied at the elementary school level, and with the teachers of English language, mathematics, music, etc.

2) The effect of clinical supervision could be studied on other dependent variables as school climate; attitudes of principal, teachers, and parents; human relationship between supervisor and teacher; leadership behaviours of the teachers.

3) Clinical supervision in the present study followed Godlhammer's Model. Further studies may follow other models viz. Cogan's Model, Hunter's Model, etc.

4) The period in the present study was only one semester. Further research could undertaken for two semesters or longer to see the consistency of the effect of clinical supervision on teacher effectiveness in a
longitudinal way.

5) Apart from the tools and techniques employed in the present study, one can select other suitable, valid and reliable tools to be used in further research.

These are mere suggestions for further investigations and not final projects. However, serving the purpose of the instructional improvement and teacher effectiveness, there are ways to carry out research with theoretical implications. It is beyond the scope of this work to suggest designs for such studies.