

**Relationship Between Teachers' Teaching Effectiveness and School  
Effectiveness in Comprehensive High Schools in Taiwan, Republic of China**

by

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# **Relationship Between Teachers' Teaching Effectiveness and School Effectiveness in Comprehensive High Schools in Taiwan, Republic of China**

## *Abstract*

The purpose of this study was to examine the relationship between teachers' teaching effectiveness and school effectiveness in comprehensive high schools in Taiwan, Republic of China. The establishment of comprehensive high schools signals a new type of secondary education. In order to improve the quality of education in comprehensive high schools, it is necessary to examine their school effectiveness. Furthermore, Reynolds (1998) and Wu (2002) both indicated that teachers play an important role in classroom activities. To ensure educational quality and improve school effectiveness, it is necessary to investigate the relationship between teachers' teaching effectiveness and school effectiveness of these schools.

This study collected data from 832 teachers in comprehensive high schools in Taiwan during the spring semester of 2004, using a questionnaire that was composed of background information, the Teachers' Teaching Effectiveness Scale and the School Effectiveness Inventory. Pilot tests of these two instruments were conducted to yield the formal research questionnaire. Finally, the data collected was analyzed by statistical methods including frequency, percentage, mean, standard deviation, reliability test, t-test, one-way ANOVA, one-way Multivariate Analysis of Variance, Scheffé method, Pearson product-moment correlation, canonical correlation, and stepwise multiple regression model.

The major findings and conclusions were:

- (1) The levels of teaching effectiveness measures of comprehensive high school teachers were moderately high, with "good teacher student relationship" being the highest, and "teaching self efficacy" being the lowest.
- (2) The levels of school effectiveness measures of comprehensive high schools were moderately high, with "principal leadership" being the highest, and "curriculum implementation" being the lowest.
- (3) Gender, age, teaching experience, teaching program, school size, type of school, and school history were significant to teachers' teaching effectiveness, while educational level, position, school area, and school background were not related to teachers' teaching effectiveness.
- (4) Gender, age, teaching experience, teaching program, school area, type of school, school background, and school history were significant to school

effectiveness, while educational level and position were not related to school effectiveness.

- (5) The higher the teachers' teaching effectiveness, the higher the school effectiveness.
- (6) Canonical analysis results showed that "systematical presentation of instructional materials" was positively related to "teaching and evaluation" and "student achievements", and "teaching self-efficacy" was positively related to "student achievements" and "teachers' job satisfaction".
- (7) Gender, type of school, "teaching self efficacy", "systematical presentation of instructional materials" and "good classroom climate" were the five best predictors for school effectiveness.

Based on the results of this study, some implications are drawn.

**Keywords:** comprehensive high school, teaching effectiveness, school effectiveness

## **Introduction**

Because Taiwan has experienced rapid development in politics, economy, and society since the 1980's, the public is increasingly concerned about educational reforms. One of the major educational reforms was the establishment of comprehensive high schools, proposed by the Educational Reform Committee of the Ministry of Education in 1996. Therefore, there are four school types in secondary education, including senior high school, vocational high school, comprehensive high school, and six-year high school. In 2004, there were 159 comprehensive high schools as compared to eighteen schools in 1996. Over the period between 1996 and 2004 was a stable increase in the development of such schools.

However, due to their rapid development, comprehensive high schools need to emphasize educational quality in addition to quantity. The frequently used quality indicator is school effectiveness, which can be measured by students' academic achievement, principal leadership, school climate, learning tactics and strategies, school culture and value, and staff professional development (Creemers, 1996). Another important factor influencing school effectiveness is teacher effectiveness as revealed by research on school effectiveness (Scheerens & Bosker, 1997).

Stringfield and Teddlie (1987) found a strong relationship between teacher effectiveness and school effectiveness. Moreover, Wu (2002) analyzed the differences between effective schools and ineffective schools, and asserted that teacher effectiveness is a basic component and an important predictor of school effectiveness.

For the purpose of improving comprehensive high schools, the findings of this study can serve as a reference for vocational teachers and administrators for a better understanding of the relationship between teachers' teaching effectiveness and school effectiveness in comprehensive high schools.

### **Statement of the Problem**

The purpose of this study was to examine the relationship between teachers' teaching effectiveness and school effectiveness in comprehensive high schools in Taiwan, Republic of China. Therefore, this study attempted to answer the following research questions:

1. What are the current status of teachers' teaching effectiveness and school effectiveness in comprehensive high schools?
2. What are the relationships between background variables, and teachers' teaching effectiveness and school effectiveness?
3. What is the relationship between teachers' teaching effectiveness and school effectiveness?
4. What are the differences in school effectiveness among teachers with various teaching effectiveness levels?
5. What are the background variables and teachers' teaching effectiveness variables, which can best predict school effectiveness?

### **Literature Review**

Comprehensive high schools became a new type of secondary education level schools in 1996. Basically, the Educational Reform Committee was concerned about appropriate secondary education for students and proposed its implementation. After eight years of expansion, comprehensive high schools grew rapidly from eighteen schools with 7,500 students in 1996 to 159 schools with 93,554 students in 2004 (Ministry of Education, 2004). The quick expansion has brought about the effectiveness issue. The public began to urge these schools to improve both teachers' teaching effectiveness and school effectiveness as well.

According to the theories of teacher effectiveness, Rotter (1966) argued that locus of control is a dominant factor by which teachers influence students' learning achievement. Teachers who believe that they can control the reinforcement of their actions have a high level of efficacy. By controlling their own behaviors, teachers expected high level of students' learning outcomes (Goddard, Hoy, & Hoy, 2000). Another strand of theory was proposed by Bandura (1977) who identified teacher

efficacy as a type of self-efficacy based on social cognitive perspective. People construct their beliefs about their capacity to perform competence. These beliefs determine the effort people expend, their persistence against difficulties, and their resilience in dealing with failures. Nevertheless, because of limited explanatory abilities of locus of control and self-efficacy approaches, this study adopted the process-process-product paradigm toward teaching effectiveness. In this paradigm, teachers' teaching, students' learning, and students' outcomes, which include student achievement and the moderating process of learning, are equally important factors in effective teaching.

Kyriakides, Campbell, and Christofidou (2002) summarized related literature and pointed out that effective teachers can provide adequate quantity of instruction, organize and manage the classroom environment, effectively use instructional time, structure instructional materials, give students practice and application opportunities, provide good classroom climate, and have enough subject knowledge, knowledge of pedagogy, teaching beliefs, and teachers' self-efficacy. In addition, in the UK, the DfEE (Department for Education and Employment, 2000) also proposed a teacher appraisal system, in which three teacher-controlled factors influencing student progress are identified: teaching skills, professional characteristics, and classroom climate. The teacher appraisal system is actually a reasonable application of teachers' teaching effectiveness components.

The development of school effectiveness research has moved from the identification of background factors influencing school effectiveness, to process- and product-oriented studies, to school improvement approach. Each stage has contributed to the knowledge of school effectiveness. However, an especially notable trend in recent development is the consideration of environmental variables whereby influencing factors must be considered in its environmental contexts, such as parental involvement in the school and the social-economic status of students (Reynolds, 1998).

Levine and Lezotte (1990) synthesized and summarized the extant American research on the characteristics of effective schools into 31 items. Similarly, in the UK, Reynolds, Creemers, Hopkins, Stoll, and Bollen (1996) analyzed general factors in school effectiveness across primary/secondary sectors and across curriculum areas. The factors described in these two studies were again synthesized as follows: principal leadership, shared vision and goals amongst staff, a high quality learning environment, high quality teaching and learning, high expectations of children's possible achievements, use of positive reinforcement and rewards, careful monitoring of children's progress, attention to children's right and responsibilities, high levels of parental involvement, high quality staff development, support for teachers, acquisition

of resources, effective teaching practice, and coordination in curriculum and instruction. In Taiwan, Wu (1989) examined the school effectiveness indicators of primary schools and found the following indicators: school environment and planning, teachers' teaching quality, student behavior, administrative communication, students' academic achievement and expectation, teachers' job satisfaction, curriculum arrangement, parent-school relationship, teacher-student relationship, and principals' leadership.

In summary, the above school effectiveness studies showed some common school effectiveness factors, including school environment, principal leadership, teachers' teaching, students' learning achievement, administrative support, staff satisfaction, and parent and community involvement. Among these common factors, teachers' teaching effectiveness is crucial to the realization of school effectiveness. Hence, the study of the relationship between teachers' teaching effectiveness and school effectiveness is significant toward the improvement of comprehensive high schools.

## **Methodology**

This study employed a questionnaire survey to explore the relationship between teachers' teaching effectiveness and school effectiveness. This section focuses on the following topics including population and sample, instrumentation, and data analysis.

### **Population and Sample**

The population in this study included all teachers serving in comprehensive high schools in Taiwan. The population was identified with the assistance of Educational Statistics (Ministry of Education, 2004). Subjects in this study consisted of 832 teachers in comprehensive high schools during the spring semester of 2004.

### **Instrumentation**

Three kinds of variables were examined in this research: background variables, teachers' teaching effectiveness variables, and school effectiveness variables. The background variables included gender, age, educational level, teaching experience, teaching program, position, school size, school area, type of school, school origin, and school history. The teachers' teaching effectiveness variables included overall teaching effectiveness, and the corresponding dimensions of multiple effective instructional technique, teaching self-efficacy, effective use of instructional time, good teacher-student relationship, systematic presentation of instructional materials, and good classroom climate. Finally, school effectiveness variables included overall

school effectiveness with its corresponding dimensions of principal leadership, school environment and facility, teachers' job satisfaction, student achievement, school climate, teaching and evaluation, curriculum implementation, parent and community involvement, and administrative support.

The data was collected using the Teachers' Teaching Effectiveness and School Effectiveness Questionnaire, which comprised three parts: background information, the Teachers' Teaching Effectiveness Scale, and the School Effectiveness Inventory. In both instruments, teachers were asked to respectively rate teachers' teaching effectiveness level and school effectiveness level on a five-point Likert scale where 1="strongly disagree" to 5="strongly agree"..

The Teachers' Teaching Effectiveness Scale has 57 items asking teachers about their teaching performance and opinions. Based on the results of discrimination analysis and Pearson product-moment correlation on the pilot test, only one item was deleted from the original scale. Originally, a factor analysis conducted by the designer of the instrument yielded six factors, including multiple effective instructional techniques, teaching self-efficacy, effective use of instructional time, good teacher-student relationship, systematic presentation of instructional materials, and good classroom climate (Wu, 2002). The Cronbach  $\alpha$  values ranged from .89 to .91 for each dimension of the scale, and .97 for the whole scale. The original validity was verified by factor analysis, with 54.91% of the cumulative proportion of variance accounted for the new factors. In this study, expert validity was employed.

The School Effectiveness Inventory contains 62 items asking teachers about their perceptions regarding school effectiveness. Based on the results of discrimination analysis and Pearson product-moment correlation on the pilot test, 11 items were deleted. The inventory has nine factors including principal leadership, school environment and facility, teachers' job satisfaction, student achievement, school climate, teaching and evaluation, curriculum implementation, parent and community involvement, and administrative support. The Cronbach  $\alpha$  values ranged from .79 to .93 for each dimension of the inventory, and .97 for the whole scale. The validity was verified by the expert group.

### **Data Analysis**

The data collected was analyzed by using the following statistical methods: frequency, percentage, mean, standard deviation, factor analysis, reliability test, one-way ANOVA, one-way MANOVA, Scheffé method, and Pearson product-moment correlation, canonical analysis, and stepwise regression model.

## Findings and Discussion

The current status of teachers’ teaching effectiveness was considered moderately high (see Table 1). The average scores for overall teachers’ teaching effectiveness measure was 4.30; multiple effective instructional techniques; teaching self-efficacy 4.02; effective use of instructional time 4.13; good teacher-student relationship 4.03; systematic presentation of instructional materials 4.07; and good classroom climate 4.03. These results were consistent with Chen’s (2001) findings. Comprehensive high school teachers did their jobs effectively except for “teaching self efficacy”. In fact, all the six dimensions are important factors contributing to teachers’ teaching effectiveness. From the perspective of teaching effectiveness perspective, teachers in comprehensive high schools are able to apply effective teaching techniques, effectively use instructional time, develop good teacher-student relationship and classroom climate, and systematically present instructional materials. However, their teaching self-efficacy level was relatively low due to inadequate preparation for and hesitation in implementing the comprehensive high school curriculum at the secondary level.

Table 1 Means and Standard Deviations of Teacher’s Teaching Effectiveness Variables

Teacher’s Teaching Effectiveness Measures	Item Number	Mean	SD	Mean/Item Number	Rank
Multiple effective instructional techniques	10	40.23	4.91	4.02	5
Teaching self efficacy	9	33.58	4.61	3.73	6
Effective use of instructional time	9	37.19	4.37	4.13	2
Good teacher-student relationship	10	41.96	4.73	4.20	1
Systematically presenting instructional materials	12	48.78	5.68	4.07	3
Good classroom climate	7	28.20	3.61	4.03	4

n=832

Likewise, the current status of school effectiveness was considered to be moderately high (see Table 2). The average scores for overall school effectiveness was 3.72; principal leadership 4.26; school environment and facility 3.94; teachers’



job satisfaction 3.66; student achievement 3.40; school climate 3.95; teaching and evaluation 3.52; curriculum implementation 3.35; parent and community involvement 3.45; and administrative support 3.78. The results showed that teachers perceived comprehensive high schools to have relatively high levels of principal leadership, school environment and facility, teachers' job satisfaction, student achievement, school climate, teaching and evaluation, curriculum implementation, parent and community involvement, and administrative support. However, the relatively lower average scores of curriculum implementation and student achievement implies that comprehensive high schools need to focus on these two school effectiveness factors.

Table 2 Means and Standard Deviations of School Effectiveness Variables

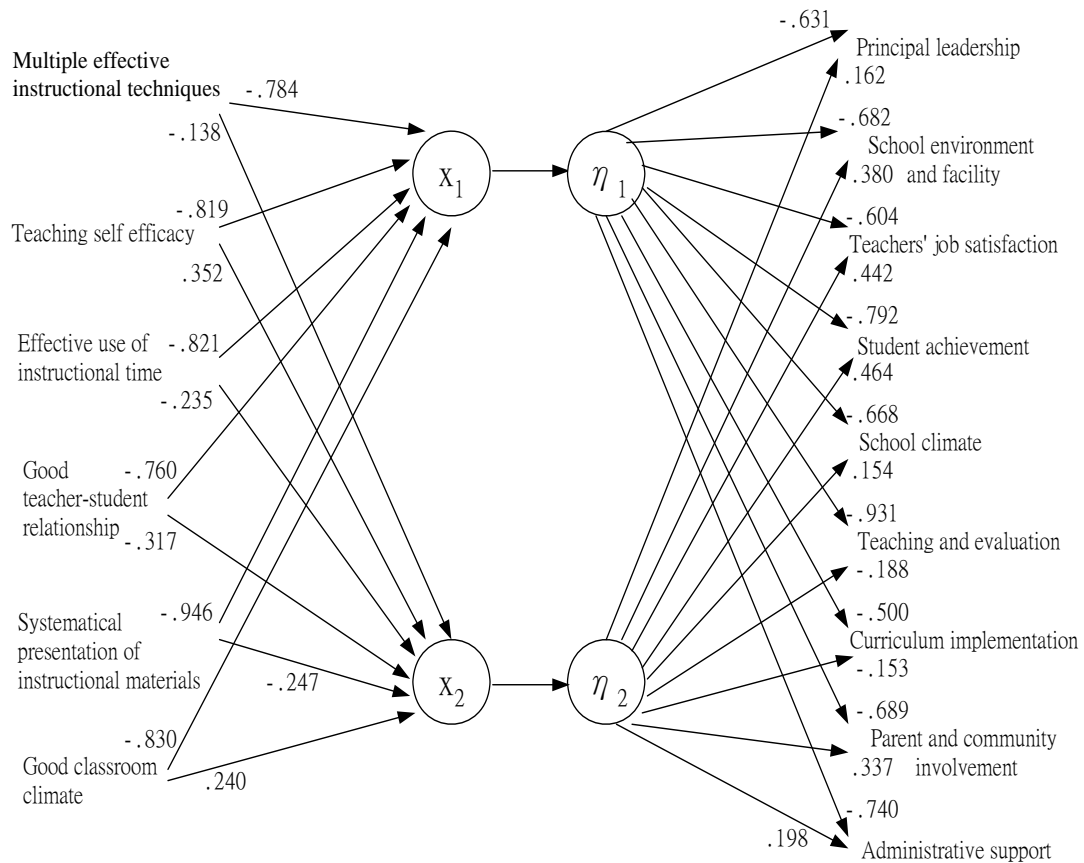
School Effectiveness Measures	Item Number	Mean	SD	Mean/Item Number	Rank
Principal leadership	8	34.07	5.04	4.26	1
School environment and facility	7	27.61	4.27	3.94	3
Teachers' job satisfaction	4	14.65	2.71	3.66	5
Student achievement	6	20.38	3.97	3.40	8
School climate	6	23.72	3.33	3.95	2
Teaching and evaluation	8	28.15	3.72	3.52	6
Curriculum implementation	6	20.10	1.95	3.35	9
Parent and community involvement	8	27.61	5.42	3.45	7
Administrative support	10	37.80	6.23	3.78	4

n=832

The results of t-tests, one-way ANOVA, and one-way MANOVA indicated that gender, age, teaching experience, teaching program, school size, type of school, and school history are significant to teachers' teaching effectiveness, while educational level, position, school area, and school origin are not related to teachers' teaching effectiveness. Specifically, male teachers, experienced teachers, teachers in career programs, teachers in larger schools, teachers in private schools, and teachers in old schools tended to teach more effectively than their counterparts. Therefore, comprehensive high schools need to improve their teaching effectiveness by encouraging female teachers, less experienced teachers, teachers in academic programs, teachers in small sized schools, teachers in public schools, and teachers in schools with shorter history to teach more effectively.

On the other hand, the results of t-tests, one-way ANOVA, and one-way MANOVA showed that gender, age teaching experience, teaching program, school area, type of school, school origin, and school history are significant to school effectiveness, while educational level and position are not related to school effectiveness. Specifically, male teachers, older teachers, experienced teachers, teachers in career programs, teachers in private schools, teachers in high schools with career programs, and teachers in old schools tended to hold a higher view of their school effectiveness than their counterparts. Therefore, in order to improve school effectiveness in these schools, it is necessary to focus on the school effectiveness performance of female teachers, younger teachers, less experienced teachers, teachers in academic programs, teachers in public schools, teachers in vocational schools, and teachers in schools with a shorter history.

The Pearson product-moment correlation results indicated that there were positive relationships between teachers' teaching effectiveness and school effectiveness. In addition, canonical analysis showed that 'systematic presentation of instructional materials' was positively related to "teaching and evaluation" and "student achievement", while "teaching self-efficacy" was positively related to "student achievement" and "teachers' job satisfaction" (see Figure 1).



## Figure 1 The Canonical Analysis Results of the Relationship Between Teachers' Teaching Effectiveness and School Effectiveness

Using background variables and teachers' teaching effectiveness variables as possible predicting variables for school effectiveness, the results of stepwise regression model showed that gender, type of school, "teaching self-efficacy", "systematical presentation of instructional materials" and "good classroom climate" are the five best predictors for school effectiveness. These findings clearly indicate the ways to improve school effectiveness in comprehensive high schools in current context.

### **Conclusions and Recommendations**

Stringfield and Teddlie (2000) conducted a school effectiveness study of elementary schools in Louisiana and found a strong relationship between teacher effectiveness and school effectiveness. Likewise, this study examined the relationship between teachers' teaching effectiveness and school effectiveness in comprehensive high schools, and similar findings are obtained. Based on the findings of this study, the following conclusions are drawn:

1. The levels of teaching effectiveness measures of comprehensive high school teachers were moderately high, with "good teacher-student relationship" being the highest, and "teaching self-efficacy" being the lowest.
2. The levels of school effectiveness measures of comprehensive high schools were moderately high, with "principal leadership" being the highest, and "curriculum implementation" being the lowest.
3. Gender, age, teaching experience, teaching program, school size, type of school, and school history were significant to teachers' teaching effectiveness, while educational level, position, school area, and school background were not related to teachers' teaching effectiveness.
4. Gender, age, teaching experience, teaching program, school area, type of school, school background, and school history were significant to school effectiveness, while educational level and position were not related to school effectiveness.
5. The higher the teachers' teaching effectiveness, the higher the school effectiveness.
6. Canonical analysis results shows that "systematically showing instructional materials" was positively related to "teaching and evaluation" and "student achievements", and "teaching self-efficacy" was positively related to

“student achievements” and “teachers’ job satisfaction”.

7. Gender, type of school, “teaching self-efficacy”, “systematically presenting instructional materials” and “good classroom climate” were the five best predictors for school effectiveness.

The following recommendations are made for administrative agencies, comprehensive high school authorities, comprehensive high school teachers, teacher education institutions, and future studies:

1. In order to improve school effectiveness, administrative agencies should emphasize teachers’ teaching effectiveness, “systematic presentation of instructional materials”, “good classroom climate”, and enhance both the teaching effectiveness of female teachers and teachers in public schools and school effectiveness.
2. Comprehensive high schools need to support teachers by enhancing training in classroom management, “effective use of instructional time”, “multiple effective teaching techniques”, and “teaching self-efficacy”. In addition, teachers’ teaching effectiveness should also be considered a part of teacher evaluation content due to its contribution to school effectiveness.
3. It is necessary for comprehensive high school teachers to reach high level of teaching effectiveness by developing teaching self-efficacy, classroom management, and curriculum development skills through in-service training or learning opportunities.
4. Teaching effectiveness-based curriculum should be designed to strengthen teachers’ teaching knowledge, skills, and attitude.
5. For future studies, it is recommended that in addition to teachers’ teaching effectiveness, other variables such as personality, ethnicity, organizational climate, organizational culture, and organizational commitment can be considered possible influencing factors in school effectiveness. In addition, target sample may possibly include students, employers, parents, and the public, and qualitative research will suffice the quantitative results of this study to explain the mechanism resulting from these influencing factors.

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