

# FACTORS INFLUENCE THE EFFECTIVENESS OF CLASS MANAGEMENT IN JUNIOR HIGH SCHOOL

<sup>1\*</sup> Yi-Chan Chung, <sup>1</sup>Shu-Fang Lin, <sup>2</sup>Chih-Hung Tsai, <sup>1</sup>Chun-Chun Hsiao

<sup>1</sup>Graduate Institute of Business Administration, Yuanpei University of Medical Technology, Taiwan

<sup>2</sup>Department of Information Management, Yuanpei University of Medical Technology, Taiwan

\*Corresponding Author, e-mail: kent4321@ms19.hinet.net

*Abstract – This study explores the influence of teachers' leadership styles, personality traits and IT application on class management effectiveness in junior high schools, through which factors affecting the management effectiveness will be found out and can be effectively executed in later practices so as to enhance class management effectiveness. With junior high school teachers as the research subjects, this study conducted empirical analysis through questionnaire to probe into the relevance between teachers' leadership styles, personality traits and IT application and class management effectiveness. 100 questionnaires were given out, among which 92 were successfully collected. After ANOVA and t test analysis, the result shows that there are four leadership styles (goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type) and five personality traits (Emotional Stability, Agreeableness, Conscientiousness, Extraversion and Openness) that are relevant to class management effectiveness. Moreover, the higher degree information technology is applied to the class, the more positive the effect on management effectiveness will be. Therefore, class management effectiveness can be improved in an obvious manner if teachers can appropriately make use of the above four leadership styles, five personalities and IT application*

**Keywords** - leadership style, personality trait, information technology, class management effectiveness

## I. INTRODUCTION

Teachers are the leading role in a class. The higher the class management effectiveness is – a result of the teacher's effort, the stronger the teacher's professional competence will be and the more vigorous the climate for learning will be. Numerous factors can impact the class management effectiveness: What kind of teacher's leadership style can unite the whole class? What are the personalities of the teacher that can enhance the class management effectiveness when encountering various problems from the students? With the prospering of information technology, will the application of information technology improve the class management effectiveness? These are the issues worthy of discussion. This study explores the influence of teachers' leadership styles, personality traits and IT application on class management effectiveness in junior high schools, through which factors affecting the management effectiveness will be found out and can be effectively executed in later practices so as to enhance class management effectiveness. The objective of this study is (1) to explore the impact of teachers' leadership styles on the class management effectiveness; (2) to discuss the impact of teachers' personality traits on the class management effectiveness; (3) to probe into the impact of IT application on the class management effectiveness; (4) to find out those items that need to be improved among the above three factors so to provide references to the teachers.

## II. LITERATURE REVIEW

### 1. CLASS MANAGEMENT EFFECTIVENESS

Kao (2007) pointed out that the connotation of class management includes class regulation, teaching, coaching, interaction between teachers and students, maintenance of peer relation, administrative support and parent-teacher communication. Ho (2009) held that class management effectiveness can be defined as the expected result of the teacher on class management which includes the cultivation of class atmosphere, the practice of teaching objective, the planning of class situation, the manifestation of daily routines and the management of interpersonal relationship. The ultimate goal of class management is to achieve effective teaching result and active learning. Chiou (2002) pointed out that class management effectiveness is the result of the teacher's effort on class management which includes the cultivation of class atmosphere, teaching quality, the planning of class situation, and daily routines that can help achieve the teaching objective. Upon analysis on the previous literature, this study divides class management effectiveness into four aspects: regular class management, parent-teacher interaction, student learning outcomes and teachers' teaching quality.

### 2. RESEARCHES ON TEACHERS' LEADERSHIP STYLES AND CLASS MANAGEMENT EFFECTIVENESS

Bass & Avolio (1994) categorized leadership styles into two types: transactional leadership and transformational leadership. Thite's (2000) categorization falls into three types: technical leadership, transformational leadership and transactional leadership. Dorfman et al. (1997) pointed out that leadership styles at least cover six types including contingent punishment, supportive, directive, contingent

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reward, charismatic and participative. Each teacher has diversified leader behaviors but only one major style. Quinn (1988) divided leadership styles into four types: goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type. The goal orientation type is guidance-oriented and target-oriented; the stable and conservative type is reserved and conforms to rules; the considerate and supportive type shows care and support for the employees and the creative and adapting type is adventurous and full of creativity. As the leadership style framework put forward by Quinn (1988) fits with the situation of teachers' leadership styles, this study takes Quinn's (1988) framework as the categorization for teachers' leadership styles: goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type.

Li (2004) pointed out that the leadership styles for teachers in junior high school are highly relevant to the class management effectiveness. Wei (2012) believed that transformational leadership can exert positive impact on class management effectiveness. Thite (2000) pointed out that the combination of technical leadership and transformational leadership can bring about better performance than transactional leadership in an obvious way. Chien (2012) pointed out democratic leadership and considerate leadership can bring the highest effectiveness to class management. Based on the above literature, this study hereby puts forward hypothesis H1: different leadership styles of the teachers may bring about obviously different impact on the effectiveness of class management.

### **3. RESEARCHES ON TEACHERS' PERSONALITY TRAITS AND CLASS MANAGEMENT EFFECTIVENESS**

McCrae & John (1992) divided personality traits into five types: (1) Emotional Stability, (2) Extraversion, (3) Openness, (4) Agreeableness and (5) Conscientiousness. The scale of personality traits used in this study is determined based on McCrae & John's (1992) Big Five personality traits and Hung's (2005) personality traits scale. Scheidecker & Freeman (1999) pointed out that the teacher's personality traits are more influential on students' learning than the teaching methods, IT application, teaching equipment and textbooks. Chien (2012) held that teachers' personality traits can exert obvious impact on the class management effectiveness. Lin (2010) pointed out that among so many personality traits, agreeableness, preciseness and self-discipline, openness as well as extraversion exert the biggest impact on class management effectiveness. Cutchin (1998) said that extraversion and conscientiousness carry positive correlation with the teachers' teaching performance while openness bears no correlation with the teachers' teaching performance. Based on the above literature, this study hereby puts forward hypothesis H2: different personality traits of teachers may bring about obviously different impact on the effectiveness of class management.

### **4. RESEARCHES ON TEACHERS' IT APPLICATION AND CLASS MANAGEMENT EFFECTIVENESS**

Roberts (1996) said that information technology refers to all the software and hardware tools which are used for achieving, demonstrating, applying, storing and

communicating information. Sakaguchi & Dibrell (1998) believed that the degree of information technology application can be measured by the investment in it and the training of it. Based on the discussions in the literatures (Sohal et al., 2001; Meso & Smith, 2000; Shyu & Wang, 2004), the degree of IT application can be categorized into four aspects, namely, opinions towards information technology, information technology literacy, level of application of information technology in class and IT software and hardware.

Moersch (1999) pointed out that the teaching forms will be changed after information technology integrates into class teaching. Many teachers, scholars and experts believe that information technology can advance educational reform, bringing changes to the traditional teaching (Dexter et al., 1999). Shih (2009) thought that teachers' IT competence bears obvious positive correlation with teaching effectiveness. Wu (2008) held that through applying the e-learning platform built based on Moodle into teaching activities, the overall teaching effect can be enhanced. Based on the above literature, this study hereby puts forward hypothesis H3: various degrees of IT application may exert different impacts on the effectiveness of class management.

## **III. RESEARCH METHOD**

This study explores the influence of teachers' leadership styles, personality traits and IT application on class management effectiveness in junior high schools. Based on the literature review, research hypotheses are put forward as follows:

H1: different leadership styles of the teachers may bring about obviously different impact on the effectiveness of class management.

H2: different personality traits of teachers may bring about obviously different impact on the effectiveness of class management.

H3: various degrees of IT application may exert different impacts on the effectiveness of class management.

### **1. QUESTIONNAIRE COLLECTION AND DATA ANALYSIS**

This study chose teachers in junior high schools in the city of Hsinchu as the research subjects who have at least one-year teaching experience with professional opinion on class management. With questionnaire as the data collection method, 100 questionnaires were given out between March and April of 2016, among which 92 were successfully collected. In exploratory research analysis, Nunnally (1978) held that when reliability reaches 0.7, the result can be regarded as acceptable. Each dimension under research in this study has a reliability of above 0.7 (Table 1). This study used SPSS to process data and materials and analysis of variance (ANOVA) and t test Analysis as the statistical methods.

### **2. VARIABLE MEASUREMENT METHOD**

The measured variables are leadership styles, personality traits, IT application and class management effectiveness. The measurement method is described below:

#### **1.Measurement of Leadership Styles**

This study adopted Quinn's (1988) categorization of leadership styles as the one for teachers' leadership styles,

namely: goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type. The leadership style scale used in this study is based on Sun's (2002) scale and opinions from some senior teachers. The detail of each type is as follows:

- (1) Goal orientation type: (a) I will clearly tell the students my teaching goal; (b) I will teach students according to the standard operating procedure and adjust according to the real-time situation; (c) I will clarify each student's scope of responsibility; (d) I have ambition on teaching; (e) I will actively assist students in achieving expected goals.
- (2) Stable and conservative type: (a) I give frequent check on the teaching progress of each subject; (b) I value each detail in various students' learning; (c) I often analyze students' learning status and inform them of things that need to be improved; (d) the classes under my tutoring is kept in good order; (e) I expect students to listen carefully, participate in discussion or take notes during class teaching.
- (3) Considerate and supportive type: (a) I will listen carefully to students' talk and personal issues; (b) I will assist students in planning their future career development; (c) I am willing to communicate with students on their questions and problems; (d) I encourage students to express their opinions and work to achieve consensus; (e) I will resolve the conflicts among students in a positive way.
- (4) Creative and adapting type: (a) I will solve problems in a creative way; (b) I encourage students to continuously improve their way of getting things done; (c) I make effort to the maintenance of good relations between schools; (d) I will explain my teaching philosophy to parents; (e) I often maintain good interactions with students.

Likert Scale was adopted to measure the results of each type. 1 score represents totally disagree, 2 scores represents disagree, 3 scores represents ordinary, 4 scores represents agree and 5 scores represents totally agree.

## **2.Measuring of Personality Traits**

This study adopted Hung's (2005) personality trait scale to measure the different personality traits of teachers and adjustment to it was made based on the opinions of some senior teachers. This study divides teachers' personality traits into five major types: Emotional Stability, Agreeableness, Conscientiousness, Extraversion and Openness. The detail of each type is as follows:

- (1) Emotional Stability: (a) I am a positive-minded teacher; (b) I am self-confident; (c) I know how to offer help for students to solve their problems; (d) I am stress-resilient; (e) I have good maintenance of my emotions.
- (2) Agreeableness: (a) I can accept students' different opinions; (b) I will look at the problems from the stance of students; (c) I try my best to help students solve problems; (d) I am considerate; (e) I maintain good relations with students.
- (3) Conscientiousness: (a) I am concentrated on what I am doing; (b) I respect rules; (c) I am responsible for my job; (d) I am careful and detail-oriented; (e) I am discreet.

- (4) Extraversion: (a) I love challenges; (b) I offer encouragement to students; (c) I am persuasive; (d) I pursue self-growth; (e) I am energetic.
- (5) Openness: (a) I have strong execution; (b) I am creative; (c) I am observant; (d) I have strong logical thinking ability; (e) I have holistic thinking ability.

Likert Scale was adopted to measure the results of each type. 1 score represents totally disagree, 2 scores represents disagree, 3 scores represents ordinary, 4 scores represents agree and 5 scores represents totally agree.

## **3.Measurement of IT Application**

The IT Application scale used in this study is based on the discussion in literatures (Sohal et al., 2001, Meso & Smith, 2000; Sakaguchi & Dibrell, 1998, Shyu & Wang, 2004) and opinions from senior teachers. The questionnaire consists of four aspects: opinions towards information technology, information technology literacy, level of application of information technology in class and IT software and hardware. The detail of each aspect is as follows:

- (1) Opinions towards information technology: (a) application of IT in class increases students' learning desire; (b) application of IT in class contributes a lot to students' study outcomes; (c) I am IT literate enough to create IT-based class activities; (d) I think it is easy to carry out the class with IT; (e) IT application reduces workload.
- (2) Information technology literacy: (a) I am capable of basic text processing, making spreadsheets and bulletins; (b) I am capable of webpage designing and creating; (c) I would design and share teaching materials with other teachers; (d) I often use multimedia devices for teacher material display; (e) I would make discussion and interaction with students online.
- (3) Level of application of information technology: (a) my delivery of teaching is based on teaching notes, the blackboard, or the projector; (b) I can provide a rich learning experience with IT; (c) I can write teaching notes or make PPT slides with computer software; (d) I would encourage my students to interact with me with IT means; (e) I would ask my students to check teaching materials or hand in their homework with IT means.
- (4) IT software and hardware: (a) the school is well equipped with computers and relative software; (b) the school receives technical support from professionals; (c) the school has a sufficient budget for information technology teaching.

Likert Scale was adopted to measure the results of each aspect. 1 score represents totally disagree, 2 scores represents disagree, 3 scores represents ordinary, 4 scores represents agree and 5 scores represents totally agree.

## **4.Measurement of Class Management Effectiveness**

The examination questions of class management effectiveness used in this study is based on the class management effectiveness indicators of Ho (2009) and Liang (2007), the situation of class management in the school and opinions from senior teachers. The questionnaire consists of four aspects: regular class management, parent-teacher interaction, student learning outcomes and teachers' teaching quality. The detail of each aspect is as follows:

- (1) Regular class management: (a) teachers and student co-formulate a set of specific and reasonable class regulation rules; (b) teachers can give full play to class monitors and cultivate their sense of responsibility; (c) class rules can be applied to regulate students' inappropriate behaviors; (d) reward and punishment systems can be applied to distinguish good and bad behaviors; (e) teachers should examine the effect of class rules from time to time and make appropriate adjustments if needed.
- (2) Parent-teacher interaction: (a) teachers can use various communication skills to have effective communication with parents; (b) teachers should be open-minded to parents' opinions; (c) teachers can reach effective communication with parents and both sides reach consensus; (d) students' behavioral problems can be solved through parent-teacher cooperation; (e) teachers should inform parents in an active way of their children's learning status and performance.
- (3) Student learning outcomes: (a) students can finish assignment on time; (b) students' academic performance fits with teachers' expectations; (c) students' performance diversity should be respected; different achievement standards should be established; (d) students actively participate in class discussions; (e) students' work should be demonstrated in different ways.
- (4) Teachers' teaching quality: (a) teachers have appropriate control on teaching progress; (b) teachers are familiar with the teaching content and capable of enhancing teaching quality through various teaching strategies; (c) teachers can stimulate students' learning interests through information technology; (d) teachers should carry out remedial teaching according to students' learning status; (e) teachers should express the teaching content in a clear and oral way.

Likert Scale was adopted to measure the results of each aspect. 1 score represents totally disagree, 2 scores represents disagree, 3 scores represents ordinary, 4 scores represents agree and 5 scores represents totally agree.

#### **IV. RESULTS ANALYSIS**

##### **1. RELEVANCE BETWEEN TEACHERS' LEADERSHIP STYLES AND CLASS MANAGEMENT EFFECTIVENESS**

This part explores the impact of leadership styles on class management effectiveness. This study divides the four leadership styles (goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type) into two clusters (high and low) according to their scores. According to each class's average score in the two clusters, examination on them will be carried out to see whether there is distinct differentiation. Table 2 shows the result of analysis of variance and hypothesis testing for the influence on class management effectiveness caused by leadership style. Research result is rejection. H1: different leadership styles will exert various impacts in an obvious way on class management effectiveness. The above four leadership styles can all influence class management effectiveness. The stronger the execution is, the more positive the influence will be.

##### **2. RELEVANCE BETWEEN TEACHERS' PERSONALITY TRAITS AND CLASS MANAGEMENT EFFECTIVENESS**

This part explores the impact of personality traits on class management effectiveness. This study divides the five personality traits (Emotional Stability, Agreeableness, Conscientiousness, Extraversion and Openness) into two clusters (high and low) according to their scores. According to each class's average score in the two clusters, examination on them will be carried out to see whether there is distinct differentiation. Table 3 shows the result of analysis of variance and hypothesis testing for influence on class management effectiveness caused by teachers' personality traits. Research result is rejection. H2: different personality traits will exert various impacts in an obvious way on class management effectiveness. The above five personality traits can all influence class management effectiveness. The stronger the execution is, the more positive the influence will be. Class management effectiveness can be enhanced if teachers can combine the four personality traits in execution.

##### **3. RELEVANCE BETWEEN TEACHERS' IT APPLICATION AND CLASS MANAGEMENT EFFECTIVENESS**

This part explores the impact of IT application on class management effectiveness. This study divides IT application (opinions towards information technology, information technology literacy, level of application of information technology in class and IT software and hardware) into two clusters (high and low) according to their scores. According to each class's average score in the two clusters, examination on them will be carried out to see whether there is distinct differentiation. Table 4 shows the result of analysis of variance and hypothesis testing for influence on class management effectiveness caused by application of information technology. Research result is support in part. H3: degrees of teachers' IT application can influence the class management effectiveness. The higher degree the application is, the more positive the influence will be.

##### **4. MEASURING OF TEACHERS' LEADERSHIP STYLES**

This study categorizes teachers' leadership styles into four types (goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type). 20 questions were used as the measuring indicators and t test analysis was applied during the measurement. Research result is shown in Table 5. It can be seen that the measuring indicators on each leadership style all reach the level of agreement ( $\mu = 4$ ).

##### **5. MEASURING OF TEACHERS' PERSONALITY TRAITS**

This study categorizes teachers' personality traits into five types (Emotional Stability, Agreeableness, Conscientiousness, Extraversion and Openness). 25 questions were used as the measuring indicators and t test analysis was applied during the measurement. Research result is shown that one item (I am creative) in the personality trait of openness does not reach the level of agreement ( $\mu = 4$ ). It is recommended that

more creative ideas and teaching methods should be adopted so to enhance class management effectiveness.

## 6. MEASURING OF IT APPLICATION

This study categorizes IT application into four aspects (opinions towards information technology, information technology literacy, level of application of information technology in class and IT software and hardware). 18 questions were used as the measuring indicators and t test analysis was applied during the measurement. Research result is shown in Table 6. It can be seen that:

- (1) On opinions towards on information technology: one item – I think it is easy to carry out the class with IT – does not reach the level of agreement ( $\mu = 4$ ).
- (2) On information technology literacy: two items – I am capable of webpage designing and creating and I would make discussion and interaction with students online – do not reach the level of agreement ( $\mu = 4$ ).
- (3) On level of application of information technology in class: two items – I would encourage my students to interact with me with IT means and I would ask my students to check teaching materials or hand in their homework with IT means – do not reach the level of agreement ( $\mu = 4$ ).
- (4) On IT software and hardware: one item – the school has a sufficient budget for information technology teaching – does not reach the level of agreement ( $\mu = 4$ ).

Efforts need to be made by teachers on the above items so to improve class management effectiveness.

## V. CONCLUSION

This study explores the influence of teachers' leadership styles, personality traits and IT application on class management effectiveness in junior high schools, through which factors affecting the management effectiveness will be found out and effectively executed so as to enhance class management effectiveness. The research result shows that:

(1) On teachers' leadership styles: the above four leadership styles, namely, goal orientation type, stable and conservative type, considerate and supportive type and creative and adapting type can all influence class management effectiveness. Class management effectiveness can be greatly enhanced if teachers can combine the four styles in execution.

(2) On teachers' personality traits: the five personality traits, namely, Emotional Stability, Agreeableness, Conscientiousness, Extraversion and Openness can all influence class management effectiveness. The stronger the execution is, the more positive the influence will be. Class management effectiveness can be enhanced if teachers can combine the four personality traits in execution.

(3) On IT application: degrees of teachers' IT application can influence the class management effectiveness. The higher degree the application is, the more positive the influence will be.

(4) On personality traits, execution on one item (I am creative) in openness is weak. It is recommended that more creative ideas and teaching methods should be adopted so to enhance class management effectiveness. On IT application, the following items do not reach the level of agreement ( $\mu = 4$ ): one item (I think it is easy to carry out the class with IT) in opinions towards information technology, two items (I am

capable of webpage designing and creating and I would make discussion and interaction with students online) in information technology literacy, two items (I would encourage my students to interact with me with IT means and I would ask my students to check teaching materials or hand in their homework with IT means) in level of application of information technology in class and one item (the school has a sufficient budget for information technology teaching) in IT software and hardware. It is recommended that teachers should strengthen their IT literacy and carry out interactions with students online. Teachers should ask my students to hand in their homework with IT means. By doing so, both the degree of IT application and class management effectiveness will be enhanced. Discussions in this study only focus on teachers in junior high school in the city of Hsinchu. Similar empirical study can be conducted toward junior high school teachers in other cities and counties so as to explore the relevance between teachers' leadership styles, personality traits and IT application and class management effectiveness in those regions. Based on that, a more complete study result will be achieved.

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**Table 1 Cronbach's Alpha Coefficients for All Variables**

Dimensions	Cronbach's Alpha	
Leadership Style	Goal Orientation Type	0.704
	Stable and Conservative Type	0.727
	Considerate and Supportive Type	0.825
	Creative and Adapting Type	0.818
Personality Traits	Emotional Stability	0.859
	Agreeableness	0.934
	Conscientiousness	0.884
	Extraversion	0.859
IT Application	Openness	0.881
	Opinions towards information technology	0.839
	Information technology literacy	0.744
	Level of application of information technology	0.753
Class Management Effectiveness	IT software and hardware	0.850
	Regular class management	0.857
	Parent-teacher interaction	0.918
	Student learning outcomes	0.786
	Teachers' teaching quality.	0.880

**Table 2 ANOVA and Hypothesis Testing for the Influence on Class Management Effectiveness Caused by Leadership Style**

			Regular Class Management	Parent-Teacher Interaction	Student Learning Outcomes	Teachers' Teaching Quality
Leadership Style	Goal orientation type	Low#	3.961	4.024	3.706	3.984
		High#	4.278	4.385	3.938	4.410
		F-value	11.393	11.232	5.270	23.049
		P-value	0.001*	0.001*	0.024*	0.000*
	Stable and conservative type	Low#	3.943	3.971	3.665	4.012
		High#	4.284	4.428	3.902	4.358
		F-value	13.531	19.481	4.861	14.143
		P-value	0.000*	0.000*	0.030*	0.000*
	Considerate and supportive type	Low#	3.910	3.967	3.638	3.971
		High#	4.264	4.368	3.892	4.344
		F-value	14.758	14.298	5.603	16.765
		P-value	0.000*	0.000*	0.020*	0.000*
	Creative and adapting type	Low#	3.916	3.904	3.572	3.968
		High#	4.324	4.519	4.019	4.419
		F-value	20.627	42.737	19.983	26.906
		P-value	0.000*	0.000*	0.000*	0.000*

Note: Low#: the average score lower than or equal to 4.00; High#: the average score higher than 4.00; \*p < 0.05.

**Table 3 ANOVA and Hypothesis Testing for Influence on Class Management Effectiveness Caused by Teachers' Personality Traits**

			Regular Class Management	Parent- Teacher Interaction	Student Learning Outcomes	Teachers' Teaching Quality
Personality Traits	Emotional Stability	Low#	3.953	3.969	3.607	4.000
		High#	4.369	4.570	4.079	4.485
		F-value	19.875	35.747	20.809	29.452
		P-value	0.000*	0.000*	0.000*	0.000*
	Agreeableness	Low#	3.988	3.985	3.596	3.985
		High#	4.250	4.445	4.010	4.420
		F-value	7.398	19.580	16.411	24.271
		P-value	0.008*	0.000*	0.000*	0.000*
	Conscientiousness	Low#	3.881	3.926	3.559	3.933
		High#	4.416	4.553	4.084	4.515
		F-value	40.958	43.660	29.175	54.004
		P-value	0.000*	0.000*	0.000*	0.000*
	Extraversion	Low#	3.898	3.945	3.578	3.993
		High#	4.405	4.541	4.070	4.443
		F-value	34.916	37.133	24.407	25.756
		P-value	0.000*	0.000*	0.000*	0.000*
Openness	Low#	3.941	3.962	3.600	3.972	
	High#	4.376	4.565	4.076	4.518	
	F-value	22.402	36.808	21.637	41.541	
	P-value	0.000*	0.000*	0.000*	0.000*	

Note: Low#: the average score lower than or equal to 4.00; High#: the average score higher than 4.00; \* p < 0.05.

**Table 4 ANOVA and Hypothesis Testing for Influence on Class Management Effectiveness Caused by Application of Information Technology**

			Regular Class Management	Parent- Teacher Interaction	Student Learning Outcomes	Teachers' Teaching Quality
IT Application	Opinions towards information technology	Low#	4.046	4.086	3.629	4.035
		High#	4.279	4.400	4.097	4.476
		F-value	5.027	7.102	18.856	21.298
		P-value	0.027*	0.009*	0.000*	0.000*
	Information technology literacy	Low#	3.988	4.072	3.672	4.063
		High#	4.408	4.488	4.056	4.472
		F-value	16.850	12.004	10.798	16.029
		P-value	0.000*	0.001*	0.001*	0.000*
	Level of application of information technology	Low#	4.006	4.096	3.690	4.082
		High#	4.429	4.486	4.067	4.486
		F-value	14.943	9.106	9.066	13.581
		P-value	0.000*	0.003*	0.003*	0.000*
	IT software and hardware	Low#	4.000	4.044	3.663	4.044
		High#	4.324	4.490	4.021	4.455
		F-value	10.276	15.482	10.102	17.918
		P-value	0.002*	0.000*	0.002*	0.000*

Note: Low#: the average score lower than or equal to 4.00; High#: the average score higher than 4.00; \* p < 0.05.

Table 5 Teachers' Leadership Style

Leadership Style Dimension		Level of Agreement			
		Mean	S.D.	T-value	P-value
Goal Orientation	I will clearly tell the students my teaching goal	4.26	0.572	4.377	.000*
	I will teach students according to the standard operating procedure and adjust according to the real-time situation	4.09	0.706	1.182	.240
	I will clarify each student's scope of responsibility	4.01	0.655	.159	.874
	I have ambition on teaching	4.20	0.616	3.049	.003*
	I will actively assist students in achieving expected goals	4.26	0.552	4.532	.000*
Stable and Conservative	I give frequent check on the teaching progress of each subject	4.40	0.536	7.200	.000*
	I value each detail in various students' learning	4.17	0.547	3.050	.003*
	I often analyze students' learning status and inform them of things that need to be improved	4.08	0.597	1.222	.225
	the classes under my tutoring is kept in good order	3.95	0.732	-.712	.478
	I expect students to listen carefully, participate in discussion or take notes during class teaching	4.34	0.651	4.965	.000*
Considerate and Supportive	I will listen carefully to students' talk and personal issues	4.34	0.519	6.222	.000*
	I will assist students in planning their future career development	4.05	0.652	.799	.426
	I am willing to communicate with students on their questions and problems	4.25	0.567	4.230	.000*
	I encourage students to express their opinions and work to achieve consensus	4.33	0.516	6.063	.000*
	I will resolve the conflicts among students in a positive way	4.46	0.522	8.383	.000*
Creative and Adapting	I will solve problems in a creative way	4.10	0.612	1.532	.129
	I encourage students to continuously improve their way of getting things done	4.33	0.516	6.063	.000*
	I make effort to the maintenance of good relations between schools	4.34	0.519	6.222	.000*
	will explain my teaching philosophy to parents	4.11	0.619	1.683	.096
	I often maintain good interactions with students	4.41	0.558	7.104	.000*

Note: H0:  $\mu = 4$ , H1:  $\mu \neq 4$ ; \* $p < 0.05$



Table 6 Application of Information Technology

Information Technology Dimension		Level of Agreement			
		Mean	S.D.	T-value	P-value
Opinion Towards Information Technology	Application of IT in class increases students' learning desire.	4.13	.650	1.925	.057
	Application of IT in class contributes a lot to students' study outcomes.	4.02	.711	.293	.770
	I am IT literate enough to create IT-based class activities.	3.93	2.163	-.289	.773
	I think it is easy to carry out the class with IT.	3.71	.806	-3.494	.001*
	IT application reduces workload.	3.87	.801	-1.561	.122
Information Technology Literacy	I am capable of basic text processing, making spreadsheets and bulletins.	4.26	.693	3.609	.001*
	I am capable of webpage designing and creating.	3.21	1.043	-7.294	.000*
	I would design and share teaching materials with other teachers.	3.86	.779	-1.741	.085
	I often use multimedia devices for teacher material display.	4.08	.774	.943	.348
	I would make discussion and interaction with students online.	3.40	.902	-6.354	.000*
Level of Application of Information Technology	I can provide a rich learning experience with IT.	3.97	.748	-.418	.677
	I can write teaching notes or make PPT slides with computer software.	3.79	1.022	-1.938	.056
	I would encourage my students to interact with me with IT means.	3.48	.748	-6.688	.000*
	I would ask my students to check teaching materials or hand in their homework with IT means.	3.30	.935	-7.140	.000*
Software and Hardware	The school is well equipped with computers and relative software.	3.91	.860	-.970	.335
	The school receives technical support from professionals.	3.89	.977	-1.067	.289
	The school has a sufficient budget for information technology teaching.	3.71	.978	-2.878	.005*

Note: H0:  $\mu = 4$ , H1:  $\mu \neq 4$ ; \*p < 0.05