

MUCH ADO ABOUT MANY THINGS: PRINCIPLE FUNCTIONS ANALYSIS AND EVALUATION OF PRIMARY PRINCIPALS' INSTRUCTIONAL LEADERSHIP IN VIETNAM

HAO THI NGUYEN¹, BERLIN WU²

Faculty of Education¹

Vietnam National University

Ho Chi Minh, Vietnam

haonguyenpy2@yahoo.com

Department of Math Sciences²

National Cheng Chi University

Taipei, Taiwan

berlin@nccu.edu.tw

ABSTRACT. *Instructional leadership is one of the components that can create positive environments and school culture by significantly effecting both teacher instruction and student learning. This paper is aimed at analyzing and evaluating ten instructional leadership functions of Vietnam primary school principals. The results show that while exercising their instructional leadership role, primary school principals concentrate on several principle instructional leadership functions in their work, but there are no notable differences expected and observed value for instructional leadership functions. Fuzzy set theory is used in this paper.*

Keywords: Instructional Leadership; Primary School Principal; Fuzzy Set Theory

1. Introduction. Improving the quality of education for the young generation is possible desire of school systems around the world. Most of schools try to reach the final aim of enhancing student achievements derived from effective teaching. Carter and Klotz (1990) asserted as the public demands for better schools, better curriculum, better instruction, and better educated students, the pressure to improve weighs heavily on all educators, especially principals. In particular, the position of primary principal has to be one of the most challenging, important jobs in today's society (Arnold, 2007) and the principal is expected to be an instructional leader in the strongest possible sense of the term.

In Vietnam, educational reforms and educational policy adjustments have been conducted since Reunion day, 1975 for promoting teaching and learning quality and fulfill demands of socio-economic development. However, principals' job compasses many roles that mean they act like managerial, political and instructional leaders as running schools. They have often been criticized because shared time spends on daily tasks without relating instructional leadership. Therefore, currently enhancing concerns about how could they manage and balance diversity of role in the context increasing teaching and learning quality requirement from parents and Ministry of Education and Training? And to what extent do

they exercise principle functions of instructional leaders according to their perceptions because obviously mentioned school leaders have main responsibility in maximize the best teaching and learning.

Given these perspectives of school leaders' role in current context, we saw the need to examine primary principals' duty as instructional leadership. This study is designed for following purposes:

(1) Analysis of frequency of six first following mentioned instructional leadership functions that primary school principals exercise in practice,

(2) Evaluation principle functions by measuring the distance and efficiency indices for expected and practical time of four last following mentioned instructional leadership functions,

(3) Investigation impacts of school leader characteristics (background variables) to instructional leadership functions.

2. Literature Review. Based on the purposes of this study, following terms that related principle functions of primary principals as instructional leaders and Vietnam education context will be reviewed. This review includes: instructional leadership; ten principle functions of principals as instructional leaders; Vietnam education context; and primary school principals in Vietnam.

2.1. Instructional Leadership and Ten Principal Functions of Principals as Instructional Leaders. As scholars in the field of education paid attention on school effectiveness in 1980, instructional leadership models emerged and instructional leadership has become broadly used. This term has been institutionalization into the vocabulary of educational administration (Hallinger, 2005). There have been several different definitions of instructional leadership and instructional leadership models. According to the "narrow" view, instructional leadership is defined as those actions that are directly related to teaching and learning (Yang, 1996, p.19). By this it means that principals' work focus on teaching and learning for reaching the educational achievement. School leaders spend the majority of their time and energies to work on instructional process. It will lead to the teaching and learning- focus task for teaching staff and students.

In this study, we will employ the instructional model proposed by Hallinger and Murphy, since it is the model that has been used most frequently in empirical investigations (Hallinger, 2005). This model proposes three dimensions for the instructional leadership role of the principal: defining the school's mission, managing the instructional program, and promoting a positive school learning climate (Hallinger, 2005). These three dimensions are further delineated into ten instructional leadership functions which are presented in Figure 1.

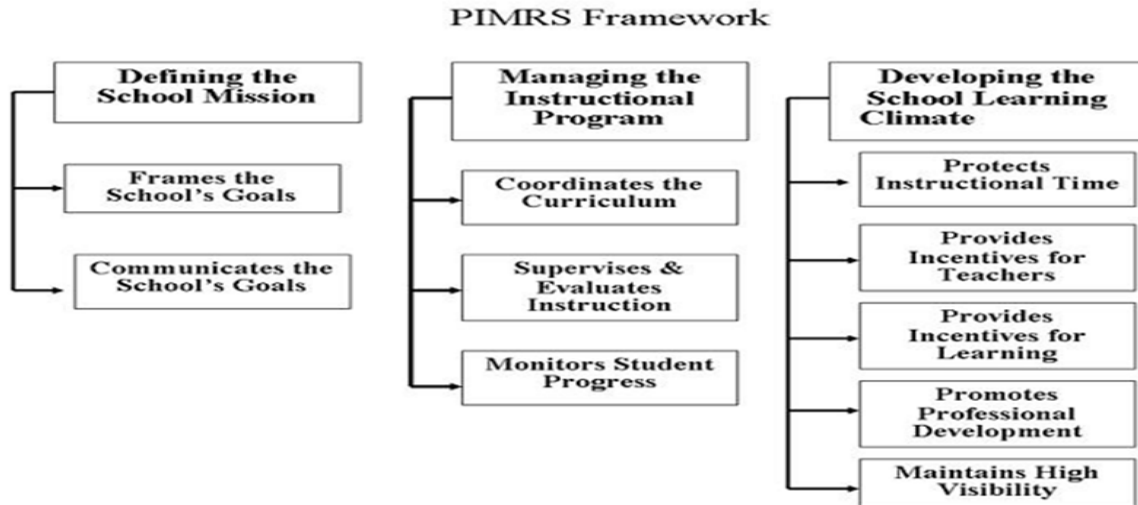


FIGURE 1. PIMRS conceptual framework

The first dimension, defining the school's mission, includes two functions: framing the school's goals and communicating the school's goals. When exercising these functions, principals set up clear, measurable, time based goals focused on the learning progress of students. And they must be key persons share school goals with staff and get them involved in implementation mutual school goals.

The second dimension requires principals have a high level of knowledge and skill in teaching and learning and a commitment to the school's improvement. Managing the instructional program incorporates three principle functions: supervising and evaluating instruction, coordinating the curriculum, and monitoring student progress.

Developing a school learning climate is presented as the third dimension. It includes several functions: protecting instructional time, providing incentives for teachers, and providing incentives for learning, promoting professional development, maintaining high visibility. According to Hallinger (2005), this dimension is broader in scope and purpose than the other two. It conforms to the notion that effective schools create an "academic press" through the development of high standards and expectations for students and teachers. Instructionally effective schools develop a culture of continuous improvement in which rewards are aligned with purposes and practices. Finally, the principal must model values and practices that create a climate and support the continuous improvement of teaching and learning.

2.2. Vietnam Education Context. The organization of Vietnam education is divided into five levels: pre-primary, primary, lower secondary, upper secondary, and higher education. Basic education consists of twelve years, of which five years of primary education, four years of lower secondary education, and three years of upper secondary education.

In primary education level, 6 year –old children have to enroll on first grade and complete this education level at the age of eleven, normally in most cases. Students having successfully completed primary education receive a certificate issued by the principal of the school. Most of primary students are registered in half-day classes, just over 10% are entitled to whole-day classes in big cities, such as Hanoi, Ho Chi Minh city. According to

the Multiple Indicators Cluster Survey 2006 of Vietnam's General Statistics Office, 96 % of six to 11 -year-old children enrolled in primary school which is compulsory for all children in the country, no matter majority or minority groups. There are 15,242 primary schools in school year 2010-2011. Since school year 2002 -2003, the Government has instructed nationwide reforms in the primary education starting from Grade 1 and in the next grades in following years. The renovation of curriculum is accompanied by renovations of textbooks, teaching methodologies and assessment methodologies. The programme must be followed by all schools nationwide (MOET, 2011). In the context of internationalization and globalization integration, Vietnam needs more resources for improving educational quality and human capital, especially school leader staff, plays a key role for bridging gaps in Vietnam educational quality in comparing this with other countries.

2.3. Primary School Principals in Vietnam. According to Primary School Regulations (MOET, 2010), public primary school principals who are responsible for organization, management school's activities and education quality, have been appointed by district bureau. Before becoming a principal, he/she must serve as a professional standard teacher at least three years and used to be a vice principal who attended several short training courses on educational administration. Otherwise, he/she is in good manners for political view point, ethics, life-style. In the public sector, an elementary school principal tenure is five years and a principal is not permitted in more than two uninterrupted tenures at the same school.

In general, most of the newly appointed principals have just taken in-services training course after appointment while their backgrounds are typically former teachers with a range of experience in teaching within the elementary school system. As a result, majority of newly appointed principals always face challenges as well as difficulties in daily work, and how to overcome these obstacles as well as meet the demand of teaching and learning quality as their increasing concerns. This requirement leads them to strongly focus on instructional leadership role with ten functions.

3. Research Method. To evaluate and analyze the work of primary school leaders are quite complex since it evolves many functions such as their awareness, their actions. They are not easy to use traditional analysis method. Hence, this study employs the fuzzy questionnaire, using two kinds of variable: (1) independent variables, including age, gender, number of school years in the current position, number of years of primary teaching experience, number of years as principal, highest level of education, school size, professional training; (2) dependent variables, including framing school goals, communicating school goals, supervising and evaluating instruction, coordinating curriculum, monitoring student progress, protecting instructional time, providing incentives for teachers, providing incentives for learning, promoting professional development, and maintaining high visibility. Part A of the fuzzy questionnaire uses a Likert scale and part B uses interval scale for the independent variables. Category scale is used for personal information. The questionnaire will be translated into Vietnamese and sent to 35 primary school principals in Vietnam.

3.1. Research Procedure. Based on instructional leadership theory and realistic observation, it is found that ten principle functions of instructional leadership role are central tasks of primary school principal if they do not want lead their schools to at-risk situation of low performances. Employing Hallinger and Murphy's framework for the study in order to analyze and evaluate principle functions of instructional leadership for primary school leaders' work in Vietnam, as perceived by primary school principals themselves. This study is conducted as the following procedure.



FIGURE 2. Research procedure

3.2. Application with Fuzzy Set Theory in Social Science Research. It is common to find that most of the events and phenomena, such as language, thinking, emotion, behaviors, and decision making, consist of ambiguity and non-quantified features. Traditional surveys or questionnaires tend to ask people to think in a binary logical way from a multiple choice design. These processes of thinking ignore the fuzzy thinking perceived in human logical recognition and it would be difficult to have people elaborate on their thoughts at a deeper level. That is the reason why fuzzy set theory has been employed in the field of social science research. Yet it still is being explored and perhaps applications remain limited in scope and much of the potential of fuzzy set theory for the human sciences remains untapped. According to Michael Smithson (1988), some of the basic elements of fuzzy set theory have been empirically investigated by cognitive psychologists, criticized on psychological and philosophical grounds, and even incorporated in some theoretical schema. Fourali (1997) highlighted the relevance of a relatively fuzzy logic to the task of measuring educational achievement. In Taiwan, scholars are interested in finding new approaches for application of fuzzy theory in social science research: Wu and Yuang (1998) and Wu and Sun (2001) demonstrated the concepts of fuzzy statistics and applied it to the social survey. Wu and Tseng (2002) used a regression method of coefficient estimation to analyze Taiwan motoring index of economics; Wu and Tseng (2002) constructed a fuzzy regression model by fuzzy parameters estimation using the fuzzy samples for application to business cycle analysis. Wu and Yen (2004) applied a new approach of bivariate fuzzy time series to the stock index forecasting. Yuang, Sun and Wu (2006) conducted a study on "Fuzzy sampling survey and statistical analysis for ESL Teaching Effect Evaluations." Yu and Wu (2009) conducted and proposed a new approach, fuzzy item response model (FIRM), in the educational or psychological measurement. Finally, Wu et al. (2010) used soft computing technique and fuzzy statistical to evaluate the school performance of the time management.

Smithson and Verkuilen (2006) explored following reasons for employment fuzzy statistics in the field of social science.

- (1) They are able to handle vagueness systematically.
- (2) Many constructs in the social sciences have both a categorical and a dimensional character. Even apparently categorical concepts often turn out to be a matter of degree.
- (3) They are able to analyze multivariate relationships beyond conditional means and the general linear model, via generalizations of set-theoretic operations.
- (4) They have theoretical fidelity. Theories frequently are expressed in logical or set-wise terms, but most statistical models for continuous variables are not.
- (5) Fuzzy set theory combines set – wise thinking and continuous variables in a rigorous fashion.

On the other hand, fuzzy set concepts may benefit the social sciences in three ways: (1) by providing the basis for “translatable” statistical techniques; (2) by linking qualitative with quantitative concepts and techniques; and (3) as an aid to conceptualization and theory construction (Smithson, 1988). However, there are some problems with fuzzy theory such as: the application of the fuzzy decision model may not always lead to a conclusive result; fuzzy theory and its mathematical applications are not as easily applied as the more

commonly used concepts from general linear models based on means, standard deviations, and standard errors (Treadwell, 1995).

In general, fuzzy set theory has attracted scholars to study and utilize in the field of social science research and it has a huge contribution in the field. Application fuzzy set theory in solving social science issues leads to precise results. It allows increased effectiveness of decision making.

3.3. Using Questionnaire in Fuzzy Statistics. Sampling survey by employing a questionnaire is popularly used in social science research to analyze and evaluate public opinion on certain issues. The questionnaire in traditional ways is asking participants to choose fixed answers using binary logic from a multiple choice design. By doing this, it ignores the fuzzy or the uncertainty of human thinking. Fuzzy questionnaire is a tool to collect fuzzy data. The concept of fuzzy questionnaire was first introduced by Bouchon (1981) in the case studying processes involving fuzzy phenomena.

A random sample of individuals in a population is selected to respond to the fuzzy questionnaire. Fuzzy questionnaires use realistic scales that describe truly respondents' opinion in linguistic or degree while traditional questionnaires contain explicitly or implicitly quantitative and/or qualitative variable, the answers are required to be just "yes" or "no". Simplified dichotomy method in traditional questionnaires is unable to accurately describe the multiple nature of human behavior. For instance, if binary logic is used in the question "To what extent your principal frames the school goal?" the participants will be forced to choose fixed answer that means one answer will be selected. It limits the flexibility of the answer and loses so much meaningful information. Fuzzy questionnaires allow using a linguistic variable with values such as "almost never", "seldom", "sometimes", "frequently", "almost always", that provides opportunity to enlarge realistic of collection of data and avoid the natural fuzziness in human being's thought. Traditional questionnaires used in public consensus are incomplete and not enough. Therefore, fuzzy questionnaires will be the reasonable choice when dealing with the real-world problems.

3.4. Fuzzy Statistics. According to Nguyen and Wu (2006), fuzzy statistics is statistics of fuzzy data. Data are fuzzy when they are expressed in our natural language. For instance, the linguistic value "good" for the primary school principal performance is a fuzzy concept since it is difficult to define precisely what "good" is. In the research of social science, precise measurements are not available so natural language is used to describe issues as well as impart knowledge and information. The most basic concept in fuzzy theory is membership grade function. It is used for describing an element's membership grade in a fuzzy set and its range is between 0 and 1. There are two kinds of membership grade function, as discretization and continuous. Discretization type membership grade function directly assign membership grade to each element in a limited fuzzy set and present the result in a vector format. Continuous type membership grade function could use several frequently used functions to describe a fuzzy set. Using membership function to express human feeling, awareness and behaviors is the fixed choice because the answers will be closer to realistic human characteristics. In this study, some fuzzy statistic concepts will be utilized, they will be illustrated as follows.

Definition 1. Fuzzy weight (FW). We consider universe of discourse $S = \{S_1, S_2, \dots, S_k\}$, utility sequence $r_1 < r_2 < \dots < r_f$ and S_i in r_f membership is $\mu_{s_i f}$. Then the fuzzy weight

$FW = \left(FW_{s_1}, \dots, FW_{s_k} \right)$ is defined as:

$$FW_i = \frac{\sum_{l=1}^f \mu_{s_i l}}{r_l} = \frac{\mu_{s_i 1}}{r_1} + \frac{\mu_{s_i 2}}{r_2} + \dots + \frac{\mu_{s_i f}}{r_f}; i = 1, \dots, c.$$

In the fuzzy set, membership ranges from 0 to 1, and every language variable, such as shape, represents a possible distribution. The results of the distribution might be different from different subjects. We can average the answers from the subjects to make the utility sequence r of universe of discourse S membership u_s reasonable distribution (Wu, 2005).

Definition 2. Fuzzy relative weight analysis. Consider utility sequence $r = \{r_1, r_2, \dots, r_f\}$, then defined $r_1 < r_2 < \dots < r_f$, $r_1 > r_2 > \dots > r_f$ as utility increasing sequence; otherwise is utility decreasing sequence.

According to the sort of utility sequence, the computing of the fuzzy relative weight is: consider universe of discourse $S = \{S_1, S_2, \dots, S_k\}$, utility sequence $r = \{r_1, r_2, \dots, r_f\}$, and $\mu_{s_i f}$ is the membership of r_f in S_i . Then the fuzzy weight for element of universe of discourse $FW = \{FWS_1, \dots, FWS_k\}$ is defined as $FW_{s_i} = \sum_{l=1}^f \mu_{s_i l} / r_l = \mu_{s_i 1} / r_1 + \mu_{s_i 2} / r_2 + \dots + \mu_{s_i f} / r_f; i = 1, \dots, c$ (Wu, 2005).

Definition 3. Fuzzy χ^2 -test of homogeneity. Consider a K -cell multinomial vector $n = \{n_1, n_2, \dots, n_k\}$ with $\sum_i n_i = n$. The Pearson chi-squared test ($\chi^2 = \sum_i \sum_j \frac{n_{ij} - e_{ij}}{e_{ij}}$) is a well

known statistical test for investigating the significance of the differences between observed data arranged in K classes and the theoretically expected frequencies in the K classes. It is clear that the large discrepancies between the following five reasons question is whether (quantitative) discrete data can be considered categorical and use the traditional χ^2 -test. For example, suppose a child is asked the following question: "how much do you love your sister?" If the responses is a fuzzy number (say, 70% of the time), it is certainly inappropriate to use the traditional χ^2 -test for the analysis. We will present a χ^2 -test for fuzzy data as follows:

3.4.1. Procedures for testing hypothesis of homogeneity for discrete fuzzy samples.

1. Sample : Let Ω be a domain, $\{L_j, j = 1, \dots, k\}$ be ordered linguistic variables on Ω , and $\{a_1, a_2, \dots, a_m\}$ and $\{b_1, b_2, \dots, b_n\}$ are random fuzzy sample from population A, B with standardized membership function mA_{ij}, mB_{ij} .
2. Hypothesis: Two populations A, B have the same distribution ratio. i.e $H_0: F\mu_A = F\mu_B$,

where $F\mu_A = \frac{1}{L_1} MA_1 + \frac{1}{L_2} MA_2 + \dots + \frac{1}{L_k} MA_k$ $F\mu_B = \frac{1}{L_1} MB_1 + \frac{1}{L_2} MB_2 + \dots + \frac{1}{L_k} MB_k$, $MA_j = \sum_{i=1}^m mA_{ij}$

$$MB_j = \sum_{i=1}^n mB_{ij}.$$

3. Statistics : $\chi^2 = \sum_{i \in A, B} \sum_{j=1}^c \frac{([Mi_j] - e_{ij})^2}{e_{ij}}$. (In order to perform the Chi-square test for fuzzy data, we transfer the decimal fractions of Mi_j in each cell of fuzzy category into the integer Mi_j by counting 0.5 or higher fractions as 1 and discard the rest.)

4. Decision rule: under significance level α , if $\chi^2 > \chi^2_{\alpha}(k - 1)$, then we reject H_0 .

3.4.2. Procedures for testing hypothesis of homogeneity for interval fuzzy samples.

1. Sample : Let Ω be a discussion domain, $\{L_j, j = 1, \dots, k\}$ be ordered linguistic variables on the total range of Ω , and $\{a_i = [a_{li}, a_{ui}], i = 1, \dots, m\}$ and $\{b_i = [b_{li}, b_{ui}], i = 1, \dots, n\}$ and are random fuzzy sample from population A, B with standardized membership function mA_{ij}, mB_{ij} .

2. Hypothesis: Two populations A, B have the same distribution ratio. i.e $H_0: F\mu_A = F\mu_B$,

$$\text{where } F\mu_A = \frac{1}{m} \frac{MA_1}{L_1} + \frac{1}{m} \frac{MA_2}{L_2} + \dots + \frac{1}{m} \frac{MA_k}{L_k} \quad F\mu_B = \frac{1}{n} \frac{MB_1}{L_1} + \frac{1}{n} \frac{MB_2}{L_2} + \dots + \frac{1}{n} \frac{MB_k}{L_k},$$

$$MA_j = \sum_{i=1}^m mA_{ij}, MB_j = \sum_{i=1}^n mB_{ij}.$$

3. Statistics : (In order to perform the Chi-square test for fuzzy data, we transfer the decimal fractions of Mi_j in each cell of fuzzy category into the integer Mi_j by counting 0.5 or higher fractions as 1 and discard the rest.)

4. Decision rule : under significance level α , if $\chi^2 > \chi^2_{\alpha}(k - 1)$, then we reject H_0 . (Nguyen & Wu, 2006)

According to Wu, Liu and Wang (2010), when a sample of interval-valued fuzziness is available, we have to consider the calculation for intervals. First, we represent the interval with $(ic; ir)$ with c being the center, r being radius. By this way, the interval distance can be considered as the difference of the center plus the difference of the radius. The difference of the center can be seen as the difference in location, and the difference of the radius can be seen as the difference in scale. However, in order to lower the impact of the scale difference on the location difference, we take the \ln value of the scale difference, and then plus 1 to avoid the \ln value goes to negative.

Definition 4. Distance between samples of interval-valued data. Let U be the universe of discourse. Let $\{xi=[ai,bi], i=1,2\}$ be two samples from U , with center $c_i = \frac{a_i + b_i}{2}$, and radius $r_i = \frac{a_i - b_i}{2}$, the distance between the two samples x_1 and

$$x_2 \text{ defined as } d(x_i, x_j) = |c_i - c_j| + \left| \frac{\ln(1 + |b_i - a_i|)}{|b_i - a_i|} - \frac{\ln(1 + |b_j - a_j|)}{|b_j - a_j|} \right|$$

The distance illustrates the gap between observed data and expected value. The smaller the distance demonstrates, the more fitting observed data is for the expected values. In order to have a clear picture about the distance between idea and reality, we need the following definitions, for which the value will be standardized constraint on 0 and 1. (Berlin Wu, Mei Fen Liu, Zhongyu Wang; 2010)

Definition 5. Index of efficiency between idea and reality. Let U be the universe of discourse. Let $OI=(c_o;r_o)$ be the observed data and $EI=(c_e;r_e)$ be the expected data from U . The index of fuzzy distance between observed and idea data is defined as

$$IOE = e^{-\left(\left|\frac{c_o - c_e}{c_e}\right| + \ln\left(1 + \left|\frac{r_o - r_e}{r_e}\right|\right)\right)}$$

Where c_o and c_e stand for the center of the observed and expected value (Wu et al., 2010).

4. Empirical Analysis

4.1. Descriptive Statistics of Samples. In order to study on principle functions for primary school leaders' work in Vietnam, 35 questionnaires were given to primary school principals in Ho Chi Minh City, Vietnam. Thirty one valid questionnaires were returned, a return rate of 88.6%. Descriptive statistics of the sample structure is given in Table 1.

TABLE 1. Descriptive statistics of samples

Background variables		Frequency	Percentage
Gender	Male	19	61.2
	Female	12	38.8
Age	29-35	4	12.9
	36-45	11	35.5
	46-60	16	51.6
Years as a principal	<2	2	6.5
	2-5	9	29
	>5	20	64.5
Highest level of education	Bachelor	17	54.8
	Master degree	9	29
	Doctorate degree	5	16.2
School size	<10 classes	2	6.5
	10-20 classes	16	51.6
	>20 classes	13	41.9

Table 1 gives background information on the 31 respondents, including gender, age, years as a principal, highest level of education, and school size. Out of 31 participants, males were the majority, accounting for 61.2 percent; more than a half of sample, 51.6 percent, were in the 46-60 year old cohort; 64.5% of the respondents have been primary school principals for more than five years; the majority have bachelor degree, accounting for 54.8 percent; 10-20 class school size was the majority of schools (51.6%).

4.2. Evaluating and Analyzing of Primary School Principal Performance.

TABLE 2. Respondents' implement of instructional leadership

Functions	Almost never	Seldom	Sometimes	Frequently	Almost always
Framing school goals	00	5.8	12.4	10.7	2.2
Communicating school goals	00	2.7	6.4	14.6	7.3
Coordinating curriculum	00	0.2	1.9	15.3	13.6
Providing incentives for learning	00	2.4	10.2	15.3	3.2
Providing incentives for teachers	00	00	0.5	17.3	13.2
Monitoring student progress	00	0.5	11.6	12.7	6.2

Table 2 presents principals' implementation of instructional leadership at Vietnamese primary schools with respect to framing school goals, communicating school goals, coordinating curriculum, providing incentives for learning, providing incentives for teachers, and monitoring student progress. Most of these activities are conducted "frequently", except for framing school goals, which is done "sometimes". In more detail, functions of framing school goals, providing incentives for learning and monitoring student progress are done from "sometimes" to "frequently" whereas activities such as communicating school goals, coordinating curriculum and providing incentives for teachers are done from "frequently" to "almost always".

TABLE 3. Analysis of the significance of background variables for the principals' implementation of instructional leadership

	Gender	Age	Number of years as a principal	Highest level of education	School size
Framing school goals	***	***	***	***	***
Communicating school goals	**	***	***	***	***
Coordinating curriculum					
Providing incentives for learning	***	***	*	***	***
Providing incentives for teachers		**	***	***	**
Monitoring student progress	**	**		***	***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3 displays the results from fuzzy χ^2 – test of homogeneity background variables, including gender, age, number of years as a principal, highest level of education, and school size. Each significant difference on framing school goals, communicating school goals, providing incentives for learning, providing incentives for teachers, and monitoring student progress. There is no significant difference between background variables and factor coordinating curriculum.

4.3. The Gap between Practical and Expected Time Of Implement Instructional Leadership. Using definition 4 and 5 in section 2.4 we can compute the gap between observation and expected time for instructional leadership functions in primary schools. The distance and efficiency indices are shown in table 4.

TABLE 4. The distance and efficiency Indices for functions of instructional leadership

Functions	Hours/per week	Mean	$d(O, E) = c_1 - c_2 + \ln(1 + r_1 - r_2)$	Efficiency indices IOE $= e^{-\left(\left \frac{c_o - c_e}{c_e}\right + \ln\left(1 + \left \frac{r_o - r_e}{r_e}\right \right)\right)}$	Ranking
B1 Maintaining public relations	Expected hours /per week	[2.1, 3.8]	0.14	0.53	4
	Practical hours /per week	[1.3, 2.7]			
B2 Protecting instructional time	Expected hours /per week	[14.1, 21]	1.06	0.92	1
	Practical hours /per week	[13.6, 19.9]			
B3 Promoting professional development	Expected hours /per week	[4.4, 6]	1	0.7	2
	Practical hours /per week	[3.5, 5]			
B4 Supervising and evaluating instruction	Expected hours /per week	[3.2, 5.9]	6.11	0.65	3
	Practical hours /per week	[2.6, 4.3]			

The distances between observed and expected time for instructional leadership functions are described in table 4. From the table 4 we can see that the indices IOE of protecting instructional time is maximum at 0.92. With IOE 0.7, promoting professional development is the second, and the third one is supervising and evaluating instruction, accounting for 0.65 of IOE. The last one is maintaining public relations with 0.53. It means that protecting instructional time management, one of principals' core tasks, is the most efficient and maintaining public relationships is contrary. However, basing on the distances that illustrate the gaps between observed and expected data we have another picture about the principals' time management. The gap between practical and expected time of factor maintaining public relations is the smallest (0.14). Whereas, supervising and evaluating instruction presents the biggest gap between observed and expected time (6.11). In practice, most of primary school principals wish they would have much more time for this task. In sum, we can conclude the primary principals' instructional leadership functions are closet to ideal and time management is highly efficient.

5. Conclusions. Analyzing and evaluating principal instructional leadership has become more and more important in improving of teaching quality in Vietnam. Traditional statistics could not fully solve the problems in the field of social science because of vagueness and imprecision in human thinking. Soft computing with fuzzy theory is a reasonable statistics method for this kind of research. Based on our findings, primary school principals in

Vietnam pay more attention to coordinating curriculum and providing incentives for teachers than others do. These things reflect the instructional leadership behavior status in principals' real work. That means principals engage in to assure that the curriculum objectives are closely aligned with both the content taught in classes and with achievement tests. In addition, they create a positive learning climate by setting up a work structure that rewards and recognizes teachers for their efforts. Most of the behaviors in instructional leadership have a little gap between observed values and expected values. Finally, there are significant differences in background variables and some functions of instructional leadership.

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