Quality Management in Primary Schools

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*A*bstract: The Hong Kong government focused its education policy on improving the quality of education. Meanwhile, the features of quality management improvement implemented in Hong Kong primary schools include 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'. The purposes of this study are to examine the relationships among 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'. A quantitative, survey questionnaire was adopted in this study. A total of 322 respondents out of 83 primary schools responded to the questionnaire. The correlation and structural equation modeling were used to analyse the data. The finding shows that there are relationships among 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'. The implications of the study are discussed finally.

Keywords: school management initiative, school-based management, quality management, value and duties, systems and teams, resources and changes, meeting pupil needs and empowering staff

1. Introduction

Education services for the Hong Kong community developed from the 1970s to the 21st century and the focus changed from quantitative to quality education. This led to the publication of *School Management Initiative* in 1991, emphasising school effectiveness, and *Quality School Education* in 1997, stressing quality education. *School Management Initiative* has such features as: (1) new roles and relationships for the Education Department; (2) new roles for school management committees, sponsors, supervisors and principals; (3) greater flexibility in school finance; (4) participation in decision making; and (5) a framework for accountability. While *Quality School Education* has such characteristics as: (1) a framework for developing and monitoring quality school education; (2) preparing for quality school education; (3) assessment of performance; (4) incentives to encourage quality school education; (5) school-based management; and (6) funding flexibility.

In the education system of Hong Kong, an increasing number of policy makers, concerned with issues of school effectiveness and educational quality by means of school-based management, have become more receptive to quality management for managing educational institutions. This is because it is believed that school-based management promotes school effectiveness and that quality management can ensure that everyone in the school can work consistently to achieve high

performance and constant improvement. The administrative reforms reflected in the local policy documents of *School Management Initiative* (Education and Manpower Branch and Education Department [EMB & ED], 1991) and *Education Commission Report No. 7 – Quality School Education* (Education Commission [EC], 1997) were underpinned by these beliefs.

In Hong Kong, different reports on educational policy for improving local educational quality were published by the Education Commission since 1986. First, it was to maintain the educational quality of the bought place scheme in private schools that the Education Commission Report No.3 (EC, 1988) was published in 1988. The scheme had been phased out in 2000 with the introduction of a direct subsidy scheme for private schools in 1989 to attain a sufficiently high educational standard and to keep minimal government control. Second, it was to address the issues of educational quality, such as teacher quality and school policies on student academic achievements, that the Education Commission Report No. 4 (EC, 1990) was published in 1990. The frontier role of teachers would only be successful if the features of school quality management like customer-driven and commitments of all school members could be stressed. Third, it was to aim at quality school education that the Education Commission Report No. 7 (ECR7) (EC, 1997) was published in 1997. This report continues the SMI's spirit with a different complexion as suggested by the western experience that a succession of policy initiatives and documents over time is the usual norm.

The Hong Kong government focused its education policy on improving the quality of education and proposed a comprehensive change of public sector school reform in financial and management strategies and procedures of the administration in 1989. In 1991, the Education and Manpower Branch and the Education Department published the policy document named *The School Management Initiative (SMI): Setting the Framework for Quality in Hong Kong Schools* (EMB&ED, 1991) for setting out the reform of the school system. The SMI document supports Hong Kong's school restructuring with a school effectiveness model, that is, to improve the efficiency and effectiveness of the school management and to achieve better quality of education in all the systems. The Hong Kong's SMI is equivalent to the United Kingdom's local management of schools, school-based management (SBM) in the United States and the self-managing school in Australia.

Four features of quality management are being implemented in Hong Kong primary schools. They are 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'. However, the relationships among the four features are still not understood. Therefore, we would like to fill this research gap. The purposes of this study are to investigate the relationships among the features of quality management. More specifically, this study aims to investigate the following research question, as perceived by both principals and teachers:

1. What are the relationships among 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff' in primary schools?

2. Theory Framework and Hypotheses Formation

Advanced countries have continuously implemented educational changes to improve educational quality. These changes included innovative school-based curriculum with activities and new teaching approaches, school improvement plans, shared decision-making among principals, teachers, parents and students, change of school management (David, 1989; Cheng, 1991; Caldwell & Spinks, 1998), use of quality control (Hofman, De Boom, & Hofman, 2010) and development of ISO 9000 (Moreland & Clark, 1998; Berry, 2002; Thonhauser, 2008; Quinn, Lemay, Larsen, & Johnson, 2009). These changes in the educational service were influenced by the results of quality management (QM), with the pursuit of quality (Peters & Waterman, 1982) being the means to the

effective end in the commerce and manufacturing organisational sectors. Several convincing research findings also demonstrated the importance of pursuing quality management (Juran, 1979; Crosby, 1979, 1986; Deming, 1986; Feigenbaum, 1987; Collard, 1990). Quality management (QM) had taken root in commerce and industry. Its applicability to education came to be widely recognised and accepted by school management theorists.

Education is coming to recognise the need to pursue the sources of quality and to deliver it to students. The sources of quality in education are said to include, in an appropriate combination, well-maintained buildings; outstanding teachers; high moral values; excellent examination results; specialisation; parental support; business and local community; plentiful resources; the application of the latest technology; strong and purposeful leadership; cares and concerns for students; a well-balanced curriculum.

As the starting point of the education process, primary schools are important for the quality process and the effectiveness of the education system (Töremen, Karakus, & Yasan, 2009). This study is organised into four quality features: 'value and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff' which are identified by West-Burnham (1992), and ECR7 (EC, 1997). The details of these four features and their relationships are outlined below:

2.1 Value and Duties (VD)

West-Burnham (1992) and Newmann (1993) affirm that a focus on infusing restructuring with a powerful commitment to an educational vision or value in a value-driven management, quality in schools is essential for enhanced educational outcomes. The importance of values can determine the concepts and methods to be used in a school (Houston, 2007). At the primary school level, the values are instilled that ensure socio-cultural identity and continuity, the foundations of human development are laid that will affect on a healthy social life. Therefore, primary schools have a fundamental effect on the life quality of individuals and societies (Töremen *et al.*, 2009). All principals and teachers are the most powerful group members in the primary schools, and they manage to influence the school leadership (Ali, 2012) and strategic palnning (Ah-Teck & Starr, 2013). Schools should have development plans and annual goals (EC, 1997; Manley, 1996; Rowlands, 1998) and established a framework for greater accountability for SBM with the participation of teachers, parents and students to achieve school goals and formulate long-term plans as to meet student needs (EC, 1997). Although the higher professionally educated principals who are more involved in school administration adopt a more positive attitude towards the change than teachers being less experienced and less involved in administrative work (Wong, 1995), teachers should participate in the School management committee (SMC) and School Executive Committee (SEC) of the school management structure to share principals' decision making and to develop various school activities in a professional way (EC, 1997). Better decision making will enable schools to implement needed strategic and operational changes, and these together will help build an effective school culture (Robertson & Briggs, 1998). Some of the quality management culture dimensions are highly consistent with educational research on school improvement (Detert, Louis, & Schroeder, 2001). Collaborative leadership styles bring multiple benefits (Anyamele, 2005; Algozzine, Audette, Marr, & Algozzine, 2005; Ngware, Wamukuru, & Odebero, 2006; EC, 1997), including better quality decisions, sharing of workloads, and greater staff commitment to implementing decisions (EC, 1997). However, they may slow down decision making when practicing participation. Difficulties of achieving collaboration were identified: first, school cultures are traditionally more individualist than collaborative; second, the concept is capable of many interpretations and may occur at different organizational levels; and third, collaboration is inextricably intertwined with power, authority and responsibility. In short, leaders are often reluctant to collaborate as they fear a loss of personal power and control in situations where they are ultimately held accountable (EC, 1997).

2.2 Systems and Teams (ST)

Quality management includes development and improvement of the school (Hofman, Dijkstra, & Hofman, 2008). In order to maximise rational decision making and administrative efficiency, the ideal structure for an organisation should be characterised by five components: (1) division of labour and specialisation, (2) impersonal orientation, (3) hierarchy of authority, (4) rules and regulations, and (5) career oritentation (Hoy & Miskel, 1996). Besides, in order to make schools effective, (1) the development of education processes should be facilitated (Purkey & Smith, 1983); the dynamics of interaction within effective functioning of the whole school system should be lubricated (Purkey & Smith, 1983); (3) effective conditions and efforts for uniting all sub-units in the school should be created (Levine & Lezotte, 1990; Scheerens, 1993); (4) the managerial, structural and cultural conditions should be conducive to effective schools (Creemers, 1993); (5) the efficiency of visionary leadership (Aksu, 2009) and (6) effective performance measurement index (Othman & Rauf, 2009).

It was also suggested that there should be a framework for developing and monitoring quality school education: a quality development commission should be set up to advise the Director of Education on quality school education. A new whole-school approach to school inspections was also advocated. A quality assurance inspectorate reorganised from the present inspection divisions should coordinate resources for periodic comprehensive assessment of the performance of each school. Schools should have school development plans, annual budgets and staff appraisal schemes. To improve quality education, teachers should actively participate in the school executive committee and school management committee (SMC) of school management, chaired by the principal and responsible to the SMC. The school management could work better if it improves school quality in line with a value-added approach; and makes teachers work in teams actively for the participation of the school executive committee and SMC (West-Burnham, 1992; EC, 1997). The principal can decide with the SMC, teachers and parents on how to use the money. In short, the quality circles were borrowed from Japanese corporate management to share experiences and work towards continuous improvement (Steed, Maslow, & Mazaletskaya, 2005; Kirby, 2006; EC, 1997), is beneficial to education. Schools should develop an appraisal system to assess the performance of teachers and principals, and introduce the value-added achievement with performance indicators as an equitable base for self-evaluation and external quality assurance to assess school performance (EC, 1997). In addition, responsibility and accountability for teachers and their professional work must lie with profession itself (Fitzgerald, 2008), therefore, teachers should receive more professional development (Corcoran, 2007).

2.3 Resources and Change (RC)

School culture is one of the most important elements to bring about change in a school. Educational management and policy is traditionally fragile when it comes to operational implementation of policy reform in schools. Thus, culture is a critical influence in determining the degree of receptivity to change (Glickman, 1990; Midgley & Wood, 1993; Sackney & Dibski, 1994). Collaborative cultures were most effective in promoting genuine change, even where there was disagreement about specific plans. Therefore, the success of quality management can be enhanced by creating a change of quality culture in schools (Glickman, 1990).

It was also recommended that, to develop quality schools, the government and teacher education institutions should provide key players like principals with appropriate courses, especially in financial and human resource management (EC, 1997; Hardman, Abd-Kadir, Agg, Migwi, Ndambuku, & Smith, 2009). Besides, TQM trainings for the teachers and its practice affect successful implementation of TQM positively (Asku, 2009). Education is an important component of TQM both in terms of informing staff on TQM practices and raising their levels of competency to successfully implement TQM principles. If they are informed about these practices, they would

easily adopt the necessary changes without a resistance (Töremen *et al.,* 2009). A block grant containing the school, class and administration grants should be provided with greater flexibility to all aided schools and the government schools to allocate funds according to their needs. The schools should have a quality circle with teachers, parents and students to share experience and work towards continuous improvement (West-Burnham, 1992; Farrar, 2000; Steed *et al.,* 2005; Kirby, 2006; EC, 1997). To build a quality culture for school continuous improvement, the government should provide the incentives of quality development grant to fund worthwhile innovative projects on competitive basis and cash awards to few schools to demonstrate the most impressive value-added performance as to raise the morale of teachers (EC, 1997).

To successfully implement TQM in schools, there is a need to accommodate change in terms of making legal arrangementd, improving social networks for teamwork and cooperation, educating people to effectively participate in this process and inducing them to exert necessary effort for this process (Töremen *et al.,* 2009).

2.4 Meeting Pupils' Needs and Empowering Staff (MNES)

In order to promote the educational quality, the pupils' needs should be identified and met (Farrar & Crabtree, 1999). Good teachers' teaching quality can foster students' self-regualted learning (Rieser, Fauth, Decristan, Klieme, & Buttner, 2013). Teachers are of key importance when considering educational effectiveness (Tymms, Jones, Albone, & Henderson, 2009). Teachers should be empowered to participate in school management (West-Burnham, 1992) and the foundations of empowerment at teacher level are human factors (e.g., psychological empowerment, motivation, professionalisation and trust) and operational factors (e.g. autonomy and information sharing) (Wan, 2005). In addition, the teachers should improve their skills, knowledge (Reusser, Butler, Symonds, Vetter, & Wall, 2007), and be well educated, they can control the TQM practices and provide feedback with their high standards for improving the quality system (Töremen *et al.,* 2009). For meeting pupils' needs and empowering staff, the school management, including all aided schools and the government schools, should practise SBM by 2000. Lack of satisfaction and self-expression by teachers, parents and students should affect the quality of learning (Pansiri, 2008; Nadiri, Kandampully, & Hussain, 2009). Teachers, parents and students should be empowered to participate in school management to achieve school goals and formulate long-term plans to meet student needs (West-Burnham, 1992; EC, 1997; Anyamele, 2005; Svensson & Klefsjö, 2006). Moreover, the school leader should establish and maintain effective communication between the school and the home (Reid, 2006). The principal can decide with the SMC, teachers and parents with greater flexibility on how to use and allocate the money or funds according to their student needs (EC, 1997). Besides, more autonomy for schools to decide on personnel management issues, especially regarding decisions for hiring teachers, will enhance the effectiveness of these schools (Maslowski, Scheerens, & Luyten, 2007). Most teachers, all administrators, and a number of parents, responding to a leadership imperative, willingly and actively took responsibility for life at the school, and administrators and teachers were determined to be guided by a capacity-building imperative which required that resources be aimed at promoting learning (Beck & Murphy, 1998).

2.5 Relationships among Four Features of Quality Management

2.5.1 Relationships between 'Value & Duties' and 'System and Teams'

Principals must identify the core value and beliefs that drive the vision and mission of the school. They have to use large and small group sessions to achieve maximum teacher input and promote consensus/team building. Since core values are the moral and philosophical fabrics from which goals are developed, small focus groups follow a large group session where a list of core values are presented and discussed (Weller, 1998). If those groups are able to articulate the values that drive their decisions and align these articulated values with those of the larger school community, those

groups will be more effective and accountable (Turnbull, 2005). In addition, the school leader should take the school's context into account, consider its consequences and translate them to the specific school situation in order to optimise student learning and achievement (Krüger, 2009). Based on the above evidence, we propose:

Hypothesis 1: *'Value & duties' is positively related to 'system and teams'.*

2.5.2 Relationships between 'Value & Duties' and 'Resources and Changes'

Transformative changes are likely to occur if a cultural-change decision has been made with respect to teachers' shared norms and values (Stoll & Fink, 1996). The school leaders have to manage the change properly when they want to incorporate quality in the existing school's culture. They have to change their managerial styles and personnel policies to incorporate rank and file employees into the schools' quality culture (Kreitner & Kinicki, 2000). Besides, the school leaders have to manage their resources properly because school facilities such as IT, teaching facilities and classrooms etc, are important to the incorporation of quality in the existing school culture. Therefore, the school leader is also required to mould the facilities (Krüger, 2009) in order to support the quality change. Based on the above literature review, we hypothesise:

Hypothesis 2: *'Value & duties' is positively related to 'resources and changes'.*

2.5.3 Relationships between 'Value & Duties' and 'Meeting Pupil Needs and Empowering Staff'

Achievement cultures support empowerment through identification with the values and ideals of a vision and through the autonomy to act (Wan, 2005). Therefore, the school leaders have to formulate, communicate and disseminate a vision in order to realise the desired learning outcomes at student level (Krüger, 2009). The teacher is an important person who can affect student satisfaction (Marzo-Navarro, Pedraja-Iglesias, & Rivera-Torres, 2005). Therefore, teachers must be satisfied that the goals of schooling are compatible with their own values and attitude. When teachers' needs are met, they can then concentrate on meeting the needs of their students and on quality outcomes (Weller, 1998). Based on the above evidence, we predict:

Hypothesis 3: *'Value & duties' is positively related to 'meeting pupil needs and empowering staff'.*

2.5.4 Relationships between 'System and Teams' and 'Resources and Changes'

School consists of different teams which are important to maintain sufficient quality changes and monitor the usage of ICT on teaching. The school leader must deploy strategies in new forms of leadership in order to advance school development and improvement (Krüger, 2009). Besides, the school leader is also required to set up policy to improve the facilities in order to maintain the quality change. Leadership roles will continue to evolve in response to changing circumstances and to an ever-changing technological society. The school leader should help teachers develop their knowledge, skills and understanding of ICT which have had an influence on teaching and learning in the classroom (Heaney, 2004). As a school making new provision, with an influential set of governors, a skilled team and a good budget can create a good school quality culture (Farrar & Crabtree, 1999). Based on the above evidence, we propose:

Hypothesis 4: *'Systems and teams' are positively related to 'resources and changes'.*

2.5.5 Relationships between 'System and Teams' and 'Meeting Pupil Needs and Empowering Staff'

The school-level review process assists schools to raise the quality of their teaching and learning and to monitor for improving the performance of their students (Peck, 1996). Enrolment, course

organisation (Marzo-Navarro *et al.*, 2005), better communication, increasing levels of sharing and rewarding (Khan & Matlay, 2009) could facilitate greater student satisfaction. Moreover, teachers should be empowered to participate in school management (West-Burnham, 1992). Autonomy, decentralisation, collaboration and information sharing have been identified as key foundations of empowerment (Wan, 2005). Based on the above literature review, we predict:

> **Hypothesis 5:** *'Systems and teams' are positively related to 'meeting pupil needs and empowering staff'.*

2.5.6 Relationships between 'Resources and Changes' and 'Meeting Pupil Needs and Empowering Staff'

In Hong Kong, the Direct Subsidy Scheme (DSS) was launched and progressed rapidly during the 1990s and in subsequent years. The schools would experience greater uncertainty due to competition from DSS schools and other innovative schools. Uncertainty and competition are the factors that schools have to consider and take appropriate actions for securing, nurturing and retaining professional teachers, with the ultimate goal of keeping their position in the education market (Wan, 2005). Under this competitive environment, students always expect teachers and schools to create learning environment in which learners can actively participate in the learning process (Tasie, 2010). Information system plays an important role in this learning environment today because it can help school improve student loyalty, retention and satisfaction (Seeman & O'Hara, 2006), and reduce teachers' workload (Selwood & Pilkington, 2005). Based on the above review, we hypothesise:

Hypothesis 6: *'Resources and changes' are positively related to 'meeting pupil needs and empowering staff'.*

The theory framework and hypotheses formation are shown in Figure 1.
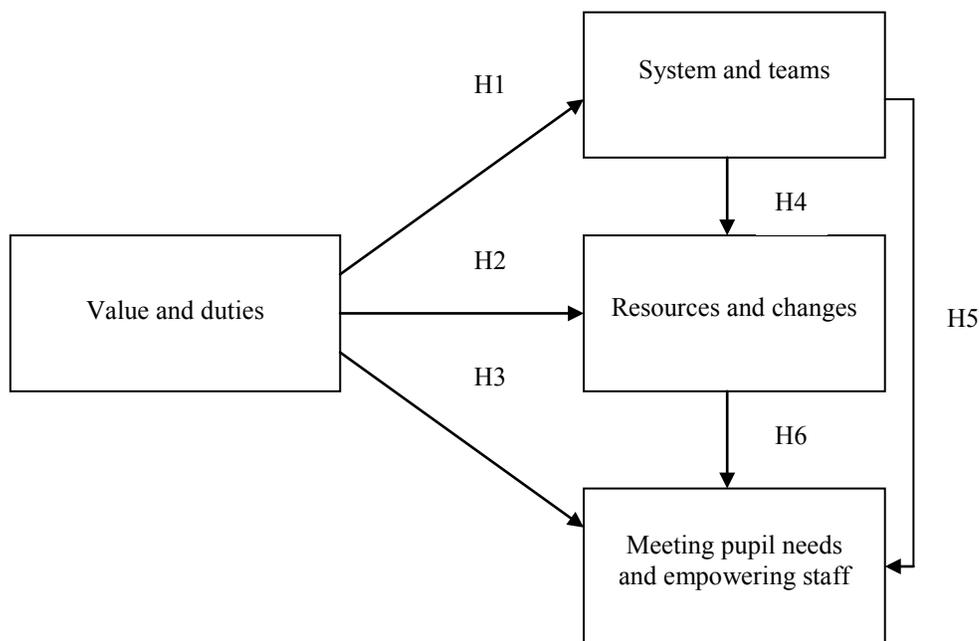
Figure 1. The theory framework and hypotheses formation

3. Research Method

To investigate the three research questions, a quantitative, survey questionnaire was adopted. This research used the survey questionnaire to investigate the perceptions of the principals and teachers towards the school's use of a quality management approach. The questionnaire included 15 items which came from 'the total quality management in school' (West-Burham, 1992) and shown in table 1 below. The items of quality management were divided into 4 areas: values and duties (Q1, Q2, Q5), systems and teams (Q3, Q4, Q11, Q12), resources and change (Q6, Q7, Q13, Q15), and meeting pupils' needs and empowered staff (Q8, Q9, Q10, Q14). Five-point Likert-type scales were assigned to all items. These items were anchored at (5) strongly agree; (4) agree; (3) no idea; (2) disagree and (1) strongly disagree.

Table 1. Items of quality management

Q1	Quality is outside our control.	1	2	3	4	5	We are all responsible for quality.
Q2	The head abdicates responsibility for quality.	1	2	3	4	5	The head is personally committed to quality.
Q3	People fit into systems.	1	2	3	4	5	Systems fit people.
Q4	The emphasis is on detection.	1	2	3	4	5	The emphasis is on prevention.
Q5	Values and mission are vague and assumed.	1	2	3	4	5	Values and mission are explicit and lived.
Q6	Training gets in the way of the real jobs.	1	2	3	4	5	Training is the only way to improve.
Q7	There is too much change.	1	2	3	4	5	Change is the natural process of education.
Q8	We teach pupils.	1	2	3	4	5	We meet customer needs.
Q9	We give out information.	1	2	3	4	5	We listen to our customers.
Q10	Senior managers administer systems.	1	2	3	4	5	Senior managers listen and think.
Q11	Mistakes are inevitable.	1	2	3	4	5	Error free is the only standard.
Q12	Work is done by individuals.	1	2	3	4	5	Work is done through teams.
Q13	Improving quality means more resources.	1	2	3	4	5	Better does not mean more resources.
Q14	Staff have to be controlled.	1	2	3	4	5	Staff must be empowered.
Q15	We are a good school.	1	2	3	4	5	We can and must improve.

For the survey, the random sampling method was first used to select different schools from a list of all Hong Kong primary schools and then a purposive sampling for heterogeneity within the group sampled. Thus, 322 questionnaires (83 from principals and 239 from teachers) were collected from a total of 460 which had been distributed to 83 primary schools. This research mainly used correlation and structural equation modeling in the analyses of data. Before the data was analysed, the Cronbach alpha values of the four features were measured using AMOS version 16. The Cronbach alpha values of 'value and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff' were 0.8386, 0.7109, 0.7376 and 0.7573 respectively. Normally, the alpha value should be greater than 0.7 for well established measures (Nunnally, 1978). As no alpha value in this survey study was less than 0.7, the results were considered to be consistent and reliable. The factor analysis was then used to conduct for 3 items of 'values and duties', 4 items of 'systems and teams', 4 items of 'resources and change' and 4 items of 'meeting pupils' need and empowered staff' separately. We found that all factor loadings were above 0.3 and the eigenvalue value of each measure was greater than one. Since factor loadings less than 0.3 were omitted as it is accepted that only factor loadings on the attributes greater than 0.3 were suitable for interpretation (Comrey, 1973), all items in these four quality areas were retained.

4. Findings

4.1 Quantitative Respondents' Personal Demographic Characteristics

Table 2 shows the respondents' personal demographic characteristics. 77.6% of the respondents were female staff, a large proportion in the educational field as compared with the whole population. Over one-third (35.4%) of them aged over 46 served for more than 10 years (62.4%) and majority served for more than 10 years (65.5%) at the present school located in Hong Kong, Kowloon and the New Territories. Over half of the respondents were holders of Bachelor's Degree or above (52.8%) and 44.1% had Bachelor of Education or above ranked at Assistant Primary School Mistress/Master or above (42.9%).

Table 2. Profile of quantitative respondents' personal demographic characteristics

Personal Characteristics	Categories	Respondent No. (N=322)	Percentage (%)
Sex	Male	72	22.4
	Female	250	77.6
Educational Qualification	Certificate	121	37.6
	Diploma	31	9.6
	Bachelor Degree	152	47.3
	Master Degree	15	4.6
	Doctor Degree	3	0.9
Age	Under 25	39	12.1
	26-30	55	17.1
	31-35	43	13.4
	36-40	26	8.1
	41-45	45	14.0
	46-50	49	15.2
	Over 51	65	20.2
Position	Certificate Mistress/ Master	184	57.1
	Assistant Primary School Mistress/ Master	20	6.2
	Assistant Mistress/ Master	35	10.9
	Principal/ Primary School Mistress/ Master	83	25.8
Professional Qualification	Teacher certificate	180	55.9
	Bachelor of Education	119	37.0
	Postgraduate Certificate/Diploma in Education	11	3.4
	Master of Education	10	3.1
	Doctor of Education	2	0.6
Year of Service	Under 5	66	20.5
	6-10	55	17.1
	11-15	37	11.5
	16-20	33	10.2
	21-25	37	11.5
	26-30	47	14.6
	Over 30	47	14.6
Year of Serving in Present School	Under 5	113	35.1
	6-10	98	30.4
	11-15	44	13.7
	16-20	26	8.1
	21-25	15	4.7
	26-30	13	4.0
	Over 30	13	4.0

4.2 Correlations among 4 Areas of Quality Management

Correlation analysis was then used to test six hypotheses. Table 3 shows the correlations among 'value and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'.

>   *Hypothesis 1*: This hypothesis was supported because there was significant difference between 'value and duties' and 'system and teams' ($r = 0.765$, $p < 0.001$).

>   *Hypothesis 2*: This hypothesis was supported because there was significant difference between 'value and duties' and 'resources and changes' ($r = 0.738$, $p < 0.001$).

>   *Hypothesis 3*: This hypothesis was supported because there was significant difference between 'value and duties' and 'meeting pupil needs and empowering staff' ($r = 0.784$, $p < 0.001$).

>   *Hypothesis 4*: This hypothesis was supported because there was significant difference between 'system and teams' and 'resources and changes' ($r = 0.759$, $p < 0.001$).

>   *Hypothesis 5*: This hypothesis was supported because there was significant difference between 'system and teams' and 'meeting pupil needs and empowering staff' ($r = 0.685$, $p < 0.01$).

>   *Hypothesis 6*: This hypothesis was supported because there was significant difference between 'resources and changes' and 'meeting pupil needs and empowering staff' ($r = 0.639$, $p < 0.01$).

Table 3. Correlation among 4 areas of quality management

Area of QM	(1)	(2)	(3)	(4)
RC (1)	1	0.639**	0.738***	0.759***
MNES (2)	0.639**	1	0.784***	0.685**
VD (3)	0.738***	0.784***	1	0.765***
ST (4)	0.759***	0.685**	0.765***	1
r is significant at *p<0.05 **p<0.01 ***p<0.001 Sig. (2-tailed)				

Confirmatory factor analysis was then conducted using AMOS version 16 to establish a model with the closest fit to the data (Hu & Bentler, 1999). The resulting model contained 15 items. The overall model suggests good fit according to the standards set forth by Hu and Bentler (1999) (chi-square of 504 with 360 degrees of freedom; SRMR = 0.068; RMSEA = 0.051; CFI = 0.97). All items had significant loadings and demonstrated convergent and discriminant validity.

5. Discussions and Implications

This study supported the six hypotheses and contributed to a new theory framework as shown in Figure 1. Furthermore, the structural equation modeling supported that the fitness of the model is very good. 'Value and duties' is an important feature of quality management. It can positively influence the other three features. At school level, schools have to set up their values and goals to support (i) the enhancement of the school facilities, such as IT, teaching, classrooms, etc.; (ii) principals and teachers' empowerment; (iii) formation of efficient small and large groups to share the information and decision-making responsibility. At principal level, the principals have to encourage their teachers to participate in the school activities, such as decision-making. In addition, teachers should be empowered to participate in school management (West-Burnham, 1992).

Principal should be well educated to supervise and monitor the quality change in a school. He has to set up the policy and system which can enable teachers to work as a team and deliver good teaching to the students. At teacher level, teachers are the first line staff who deliver the knowledge to student everyday and they can affect student satisfaction easily (Marzo-Navarro *et al.*, 2005). So they should also be well educated (Töremen *et al.*, 2009**).** Schools and principals have to match the goals of schooling with teachers' values. When teachers' needs are met, teachers can focus on meeting the needs of their students (Weller, 1998).

'System and teams' can also have positive influence on 'resources and changes' and 'meeting pupil needs and empowering staff'. School has set up a special team which can maintain sufficient quality changes and monitor the usage of ICT on teaching. The principal is required to deploy strategies to advance school development and improvement, and maintain the quality change. Principal is also required to help teachers who develop their knowledge, skills (Reusser *et al.,* 2007) and understanding of ICT which have had an influence on teaching and learning in the classroom. In addition, the school-level review process should be set up properly to improve the performance of their students. The teachers' teaching quality can directly enhance students' self-regualted learning (Rieser *et al.,* 2013). Principals should also be aware of the importance of enrolment, course organisation, communication channels, sharing and rewarding because they could facilitate greater student satisfaction. Besides, principals have to delegate authority to teachers and encourage them to participate in school management.

'Resources and changes' also have positive impact on 'meeting pupil needs and empowering staff'. In Hong Kong, uncertainty and competition are the factors that schools have to consider and take appropriate actions for securing, nurturing and retaining professional teachers, with the ultimate goal of keeping their position in the education market. Under this competitive environment, schools have to improve their facilities, such as computers, to keep students to actively participate in the learning process. As a result, student loyalty, retention and satisfaction could be properly maintained. The workload of teachers could also be reduced. In addition, the TQM trainings for the teachers can help them implement the quality teaching successfully (Asku, 2009) and sufficient education can raise the teachers' levels of competency to successfully implement TQM principles (Töremen *et al.*, 2009).

The major implication of this study is that the school leaders should be aware of the relationships among 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff' in primary schools. In order to achieve the successful implementation of quality management in primary schools, it is recommended to have the following improvements: (1) setting annual goals and targets for the school, teachers and students; (2) establishing school structures; and (3) developing effective leadership with collaborative and collegial relationships; (4) teachers should be well empowered; (5) the appropriate computer systems should be set up for the effective teaching; (6) students' needs should be well satisfied

6. Limitations and Recommendations for Future Research

There are two major limitations of the study. First, the findings are only based on the respondents' perceptions. Second, sample size is too small and only 322 respondents may not be representative enough.

In order to improve the validity and reliability, some recommendations are suggested as follows. First, a larger sampling scale with larger size and more types of schools widely located in the place studied should be recommended because the larger is the scale of the project, the data obtained will be more valid, reliable, representative and generalised of the whole population. Second, qualitative

method, such as interview, can be used to explore the reasons why there are relationships among four areas of quality management.

7. Concluding Remarks

This study concludes that there are relationships among 'values and duties', 'systems and teams', 'resources and changes', and 'meeting pupil needs and empowering staff'.

Since the Education Department's publications of SMI in 1991 and QSE-ECR7 in 1997, primary schools in Hong Kong have changed from the model of external control management to SBM in order to promote the educational quality. Quality management tends to be passive in a culture with the teacher's participation in controlling school management. Some factors including school and student backgrounds, school tradition, school climate and culture, community expectation of the school, still affect quality management on school management effectiveness. Thus, the leadership of principals, teachers and parents in the present complicated and knowledge-changing society should continuously pursue life-long learning for professional development in order to enhance quality management. All these factors have to be taken into account and it is hoped that future researchers will consider them in further studies of educational quality.

References

[1] Ah-Teck, J. C., & Starr, K. (2013). Principals' perceptions of "quality" in Mauritian schools using the Baldrige framework. *Journal of Educational Adminsitration, 51*(5), 680-704.

[2] Aksu, A. (2009). Total quality management and visionary leadership in primary schools. *Education and Science, 34*(153), 99-116.

[3] Algozzine, B., Audette, R. H., Marr, M. B., & Algozzine, K. (2005). An application of total quality principles in transforming the culture of classrooms. *Planning and Changing*, *36*(3-4), 176-192.

[4] Anyamele, S. C. (2005). Implementing Quality Management in the University: The Role of Leadership in Finnish Universities. *Higher Education in Europe*, *30*(3-4), 357-369.

[5] Beck, L.G., & Murphy, J. (1998). Site-Based Management and School Success: Untangling the Variables. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice, 9*(4), 358-385.

[6] Berry, G. (2002). Towards Quality Systems Development in NSW Public Schools. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice, 13*(2), 201-223.

[7] Caldwell, B. J., & Spinks, J. M. (1988). *The self-managing school*. London: Falmer Press.

[8] Cheng, Y. C. (1991). Leadership Style of Principals and Organisational Process in Secondary Schools. *Journal of Educational Administration*, *29*(2), 25-37.

[9] Collard, R. (1990). *Total quality, success through people.* London: Institute of Personnel Management.

[10] Comrey, A. L. (1973). *A first course in factor analysis*. New York: Academic Press.

[11] Corcoran, T. B. (2007). *Teaching Matters: How State and Local Policymarkers can improve the quality of teachers and teaching*. Document Id: RB-048, RB-48, Consortium for Policy Research in Education.

[12] Creemers, B. P. M. (1993). Development of a theory on educational effectiveness: Testing a multi-level multi-factor, contextual theory about education. *Educational Research Journal*, *8*, 1-11.

[13] Crosby, P. B. (1979). *Quality is free: the art of making quality certain.* New York: McGraw Hill.

[14] Crosby, P. B. (1986). *Quality without tears: Art of hassle-free management.* Maidenhead: McGraw Hill.

[15] David, J. L. (1989). Synthesis of research on school-based management. *Educational Leadership*, *46*(8), 45-53.

[16] Deming, W. E. (1986). *Out of the crisis.* Massachusetts: Massachusetts Institute of Technology.

[17] Detert, J. R., Louis, K. S., & Schroeder, R. G. (2001). A Culture Framework for Education: Defining Quality Values and Their Impact in U.S. High Schools. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice, 12*(2), 183-212.

[18] Education and Manpower Branch and Education Department (EMB&ED) (1991). *The school management initiative: Setting the framework for quality in Hong Kong schools.* Hong Kong: Education Department.

[19] Education Commission (EC) (1988). *Education Commission Report No. 3.* Hong Kong: Education Department.

[20] Education Commission (EC) (1990). *Education Commission Report No. 4.* Hong Kong: Education Department.

[21] Education Commission (EC) (1997). *Education commission report no. 7 – Quality school education.* Hong Kong: Education Department.

[22] Farrar, M., & Crabtree, H. (1999). Achieving customer loyalty in an educational market-place. *Total Quality Management, 10*(4-5), 531 – 539.

[23] Farrar, M. (2000). Structuring success: a case study in the use of the EFQM Excellence Model in school improvement. *Total Quality Management, 11*(4-6), 691 – 696.

[24] Feigenbaum, A. V. (1987). *Total quality control* (4th ed.). New York: McGraw Hill.

[25] Glickman, C. D. (1990). Pushing school reform to a new edge: the seven ironies of school empowerment. *Phi Delta Kappan*, *72*(1), 68-75.

[26] Ali H. M. (Hairuddin, M. A.) (2012). The quest for strategic Malaysian Quality National Primary School Leaders. *International Journal of Educational Management, 26*(1), 83-98.

[27] Hardman, F., Abd-Kadir, J., Agg, C., Migwi, J., Ndambuku, J., & Smith, F. (2009). Changing pedagogical practice in Kenyan primary schools: the impact of school-based training. *Comparative Education*, *45*(1), 65-86.

[28] Heaney, L. (2004). Leading professional development: a case study. *The International Journal of Educational Management, 18*(1), 37-48.

[29] Hofman, R. H., Dijkstra, N.J., & Hofman, W. H. A. (2008). Internal versus external quality management. *International Journal of Leadership in Education: Theory and Practice*, *11*(3), 281-300.

[30] Hofman, R. H., De Boom, J., & Hofman, W. H. A. (2010). Quality control in primary schools: progress from 2001–2006. *School Leadership & Management: Formerly School Organisation, 30*(4), 335-350.

[31] Houston, D. (2007). TQM and Higher Education: A Critical Systems Perspective on Fitness for Purpose. *Quality in Higher Education*, *13*(1), 3-17.

[32] Hoy, W. K., & Miskel, C. G. (1996). *Educational administration - Theory, research, practice* (5th ed.). New York: McGraw Hill.

[33] Hu, L. T., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

[34] Juran, J. M. (1979). *Quality control handbook* (2nd ed.). New York: McGraw Hill.

[35] Kirby, L. (2006). Establishing a Framework for Quality. *School Administrator*, *63*(8), 30-33.

[36] Khan, H., & Matlay, H. (2009). Implementing service excellence in higher education. *Education + Training, 51*(8/9), 769-780.

[37] Kreitner, R., & Kinicki, A. (2000). *Organisational Behaviour* (5th ed.). Boston: McGraw-Hill.

[38] Krüger, M. (2009). The big five of school leadership competences in the Netherlands. *School Leadership and Management, 29*(2), 109-127.

[39] Levine, D. U., & Lezotte, L. W. (1990). *Unusually effective schools: A review and analysis of research and practice.* Madison: National Center for Effective Schools Research and Development.

[40] Marzo-Navarro, M., Pedraja-Iglesias, M., & Rivera-Torres, M. P. (2005). Measuring customer satisfaction in summer courses. *Quality Assurance in Education, 13*(1), 53-65.

[41] Maslowski, R., Scheerens, J., & Luyten, H. (2007). The Effect of School Autonomy and School Internal Decentralization on Students' Reading Literacy. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice, 18*(3), 303 – 334.

[42] Midgley, C., & Wood, S. (1993). Beyond site-based management: empowering teachers to reform schools. *Phi Delta Kappan, 75*(3), 245-252.

[43] Moreland, N., & Clark, M. (1998). Quality and ISO 9000 in educational organisations. *Total Quality Management, 9*(2-3), 311-320.

[44] Nadiri, H., Kandampully, J., & Hussain, K. (2009). Students' perceptions of service quality in higher education. *Total Quality Management & Business Excellence, 20*(5), 523-535.

[45] Newmann, F. M. (1993). Beyond common sense in educational restructuring: The issues of content and linkage. *Educational researcher*, *22*(2), 4-22.

[46] Ngware, M. W., Wamukuru, D. K., & Odebero, S. O. (2006). Total quality management in secondary schools in Kenya: extent of practice. *Quality Assurance in Education, 14*(4), 339 - 362.

[47] Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw-Hill.

[48] Othman, R., & Rauf, F. A. (2009). Implementating school performance index (SPIn) in Malaysian primary schools. *International Journal of Educational Management, 23*(6), 505-522.

[49] Pansiri, N.O. (2008). Instructional Leadership for Quality Learning – An Assessment of the Impact of the Primary School Management Development Project in Botswana. *Educational Management Administration & Leadership*, *36*(4), 471-494.

[50] Peck, F. (1996). *Educational reform: Local management of schools*. Paper presented at the International Congress for school effectiveness and improvement. Minsk: Belarus, January.

[51] Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best-run companies.* New York: Harper & Row.

[52] Purkey, S. C., & Smith, M. S. (1983). Effective schools: A review. *The Elementary School Journal, 83*(4), 426-452.

[53] Quinn, A., Lemay, G., Larsen, P., & Johnson, D.M. (2009). Service quality in higher education. *Total Quality Management, 20*(2), 139-152.

[54] Reid, K. (2006). Raising school attendance: a case study of good practice in monitoring and raising standards. *Quality Assurance in Education, 14*(3), 199-216.

[55] Reusser, J., Butler, L., Symonds, M., Vetter, R., & Wall, T. J. (2007). An assessment system for teacher education program quality improvement. *International Journal of Educational Management, 21*(2), 105-113.

[56] Rieser, S., Fauth, B. C., Decristan, J., Klieme, E., & Buttner, G. (2013). The connection between primary school students' self-regulation in learning and perceived teaching quality. *Journal of Cognitive Education and Psychology, 12*(2), 138-156.

[57] Manley, R. J. (Robert, M.) (1996). Coalescing a School Community around Total Quality: A Siperintendent's Perspective. *The School Administrator*, *53*(7), 29-32.

[58] Robertson, P. J., & Briggs, K. L. (1998). Improving schools through school-based management: an examination of the process of change. *School Effectiveness and School Improvement, 9*(1), 28-57.

[59] Rowlands, K. (1998). Total quality management at the Dell Primary School. *Total Quality Management, 9*(4-5), 203 – 209.

[60] Sackney, L. E., & Dibski, D. J. (1994). School-based management: A critical perspective. *Educational Management and Administration*, *22*(2), 104-112.

[61] Scheerens, J. (1993). Basic school effectiveness research: Items for a research agenda. *School Effectiveness and School Improvement*, *4*(1), 17-36.

[62] Seeman, E. D., & O'Hara, M. (2006). Customer relationship management in higher education: Using information systems to improve the student-school relationship. *Campus-Wide Information Systems, 23*(1), 24-34.

[63] Selwood, I., & Pilkington, R. (2005). Teacher workload: using ICT to release time to teach. *Educational Review, 57*(2), 163-174.

[64] Steed, C., Maslow, D., & Mazaletskaya, A. (2005). The EFQM Excellence Model for Deploying Quality Management: A British-Russian Journey. *Higher Education in Europe*, *30*(3-4), 307-319.

[65] Stoll, L., & Fink, D. (1996). *Changing our schools.* Buckingham, UK: Open University Press.

[66] Svensson, M., & Klefsjö, B. (2006). TQM-based self-assessment in the education sector: Experiences from a Swedish upper secondary school project. *Quality Assurance in Education*, *14*(4), 299-323.

[67] Fitzgerald, T. (Tanya, F.) (2008). The Continuing Politics of Mistrust: Performance Management and the Erosion of Professional Work. *Journal of Educational Administration and History*, *40*(2), 113-128.

[68] Tasie, G. O. (2010). Analytical observations of the applicability of the concept of student-as-customer in a university setting. *Educational Research and Reviews, 5*(6), 309-313.

[69] Thonhauser, T. (2008). Factors that relate to the time to ISO 9000 registration in education institutions. *School Effectiveness and School Improvement*, *19*(3), 333–349.

[70] Töremen, F., Karakus, M., & Yasan, T. (2009). Total quality management practices in Turkish primary schools. *Quality Assurnace in Education, 17*(1), 30-44.

[71] Turnbull, B. (2005). Evaluating school-based management: A tool for team self-review. *International Journal of Leadership in Education, 8*(1), 73-79.

[72] Tymms, P., Jones, P., Albone, S., & Henderson, B. (2009). The first seven years at school. *Educational Assessment, Evaluation and Accountability, 21*(1), 67-80.

[73] Wan, E. (2005). Teacher empowerment: concepts, strategies, and implications for schools in Hong Kong. *Teachers College Record, 107*(4), 842-861.

[74] Weller, L.D. (1998). Unlocking the culture for quality schools: reengineering. *International Journal of Educational Management*, *12*(6), 250-259.

[75] West-Burnham, J. (1992). *Managing quality in schools: A TQM approach.* London: Longman.

[76] Wong, K. C. (1995). Education accountability in Hong Kong: lessons from the school management initiative. *International Journal of Educational Research*, *23*(6), 519-529.