

# NASSP Bulletin

<http://bul.sagepub.com>

---

## **Complexity Theory and School Reform**

Wanda Siu

*NASSP Bulletin* 2008; 92; 154

DOI: 10.1177/0192636508320890

The online version of this article can be found at:  
<http://bul.sagepub.com/cgi/content/abstract/92/2/154>

---

Published by:



<http://www.sagepublications.com>

On behalf of:

National Association of Secondary School Principals

**Additional services and information for *NASSP Bulletin* can be found at:**

**Email Alerts:** <http://bul.sagepub.com/cgi/alerts>

**Subscriptions:** <http://bul.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations** <http://bul.sagepub.com/cgi/content/refs/92/2/154>

# Complexity Theory and School Reform

Wanda Siu

There is a paucity of studies that assess the influence of communication in facilitating educational change. The purpose of this study was to examine the role of communication for high school principals in the implementation of education reform. Overall, the study found that top-down communication strategy was more prevalent in high schools. These findings are consonant with complexity theory, which posits that self-organizing activities are best promoted by interactions and connection among staff members.

**Keywords:** *principal; communication; complexity theory*

Leadership literature suggests that the sustainability of education reform relies on leaders who initiate system change (Fullan, 2006). System change of schools can be accomplished by having school administrators foster networks between schools and communities (Fullan, 2001, 2006). This issue can be seen from the perspective of complexity theory. Schools are complex adaptive systems that undergo self-organization during educational change (Fullan, 2006). For example, at the college level, colleges face budgetary constraints and changes in the educational curriculum. Teachers begin to adjust their behavior by adapting to changes in the curriculum, the mode of instruction, and the stringent research requirements to cope with new government funding and college tenure policies. Following is another example at the pre-college level: In response to education reform that involves the school management structure, secondary schools revamp their communication structures by practicing distributed leadership to enhance the flow of information throughout the schools and thereby facilitate the connections among people. From this perspective, the quality of a complex adaptive school system lies in connection and interaction, such that individuals interact and cooperate with colleagues to enhance teaching and learning. In this sense, effective school leadership should enhance a spirit of collaboration and a participative culture for reform implementation. What are the factors that facilitate school leadership in reform implementation?

---

Correspondence concerning this article may be sent to: Wanda Siu, [siuwanda@cuhk.edu.hk](mailto:siuwanda@cuhk.edu.hk).

## **The Importance of Principal Leadership in Reform Implementation**

Principal leadership has been widely recognized as one of the most important factors that contribute to the successful implementation of education reform (Datnow & Castellano, 2001; Fullan, 2006; Murphy, 1994). The role of leadership is to enhance a collaborative culture and to empower teachers (Fullan, 1999, 2001; Louis & Miles, 1990). The relative success of education change hinges on community-related and school-related factors (Fullan, 1994; Leithwood & Montgomery, 1982), which may affect the communication practices and self-organizing capacities of schools. Schools are complex adaptive systems that undergo self-organization amid educational change (Fullan, 2001, 2006).

Specifically, the change initiatives of principals affect classroom- and school-related factors. Classroom-related factors are related to selecting competent teachers, matching teachers with students, and setting priorities for instructional goals. School-related factors include relationships among colleagues and securing resources and support from the community (Anderson & Shirley, 1995; Leithwood & Montgomery, 1982). Effective principal leadership involves the development of a collaborative system of networks with parents, communities, and professional organizations to enhance the sustainability of school improvement efforts (Fullan, 2005, 2006; Murphy & Louis, 1999) and to maintain a sense of trust among colleagues in schools (Murphy & Louis, 1999). As a result, principals spend an increasing amount of time extending the school community to enhance the school's image in the community (Murphy, 1994).

### **Factors Obstructing Principal Leadership in Reform Implementation**

Principals face a number of problems in their attempts to improve school programs. The role of the principal has become increasingly ambiguous and complex (Dow & Whitehead, 1980; Hallinger & Anast, 1992). Traditionally, principals functioned as managers of the status quo. District administrators evaluated the performance of principals according to their relative success in implementing the educational policies and procedures of the districts (Houts, 1975). Today principals need to function as change agents amid educational changes: Principals should not only take up the leadership in curriculum planning and instruction (Hallinger & Anast, 1992; Murphy, 1989), but they also should become leaders in fostering consensus and collaborative problem solving (Brown & Hunter, 1998). Because a major change affects the relationship between principals and teachers, effective leadership requires political skills and the use of social power to solve conflicts and build consensus (Benveniste, 1989; Willower, 1991). Furthermore, because teachers are key stakeholders in reform implementation, their needs must be met if the reform program is

to succeed (Fullan & Stiegelbauer, 1991). For example, the success of middle school reform hinges on the broad participation in the development of the school's vision and the collaboration among teachers in teaching reforms (Neufeld, 1997).

The obstacles that principals face in the implementation of education change at the school level are partly attributed to the disincentives of teachers in reform implementation. There is a general resistance to change (Dow & Whitehead, 1980), particularly when a major change affects the relationship between principals and teachers (Fullan & Stiegelbauer, 1991). Leithwood and Montgomery (1982) noted that the instructional practices of teachers are shaped more by the needs of students than by the pedagogical expectations of principals. The obstacles for principals in motivating teachers in educational change are partly attributed to the autonomy of the teaching profession (Deal & Celotti, 1980) and a lack of effective supervision (Dreeban, 1973). In response to education change, teachers are concerned about job security and seek to retain a certain kind of organizational structure (Corcoran, Walker, & White, 1988). Bacharach, Bamberger, and Mitchell (1990) examined the reaction of teachers to education change in upstate New York regarding job structure and satisfaction. From a survey of 2,247 teachers in 83 school districts, the results showed that teachers welcomed changes in job structure that reduced role conflict and role ambiguity. In short, as long as the educational changes guaranteed job security and reduced the complexity of their job structure, teachers had greater motivation to change.

So how should principals motivate teachers, the key stakeholders in reform, to effectively implement reform programs? Research has suggested that principals should become the leaders in the teaching-learning process (Murphy, 1990) and the lead learners and advocates of school reforms (Neuman & Mohr, 2001). As the instructional leader, the principal should shape teaching and learning curricula (Peterson, 1990) and articulate the core values of the school reform (Neuman & Mohr, 2001). Studies have showed that although teachers often function as individuals in schools, principals should promote a collaborative working environment by interdisciplinary team meetings and professional development activities and should engage teachers in the decision-making process in school development (Chubb, 1988; Mortimore, Sammons, Stoll, Lewis, & Ecot, 1988).

### **The Case Study: Principal Leadership During Education Reform in Hong Kong**

Principals in Hong Kong face the challenge of implementing a series of reform programs that involve curriculum changes, language education, and assessment mechanisms. The Chief Executive announced the reform proposals of the Hong Kong education system in his October 2000 Policy Address. Since then, reforms have been carried out with the motto "all for the students, for all students and for the good of all students" (Education Commission, 2004, p. 3). Principals play a pivotal

role in putting the blueprint of the reform proposals into practice by implementing the policies in teaching and learning.

This case study explored the communication strategies of principals in implementing education reform. The education reform aimed at developing and enhancing student abilities and positive values for lifelong learning and whole-person development (Education Commission, 2004, p. 10). To this end, the reform had several core components: reading to learn, moral and civic education, and project learning. The reading policy calls for a reading time of 15 minutes every school day during which time everyone in the school reads. The moral and civic education component encourages schools to arrange activities to enhance the identification of students with Mainland China through the participation of enrichment and leadership programs. Project learning was implemented in all high schools, and schools are required to choose a project learning focus every year. For example, a school can set the research theme for each grade level as “Hong Kong—East meets West.”

This case study was timely; teacher morale was at an all-time low since the inception of the education reform in 2000. Eleven teachers had committed suicide during a period of a few years, and their deaths were attributed partly to work pressure and partly to emotional problems. The suicide of two teachers in January 2006 led to a demonstration by 10,000 teachers, who demanded that the Education and Manpower Bureau (EMB) rethink the pace of implementing the education reform. In response, the EMB issued a \$1.65 billion package (Hong Kong currency) in January 2006 for school development that included recruiting more staff and relieving the administrative work of teachers.

Leithwood and Montgomery (1982) summarized key strategies that principals use to implement educational changes. There are two major dimensions: (a) interpersonally oriented (i.e., maintaining interpersonal relationships and motivating staff) and (b) task oriented (i.e., using goal and priority setting, supporting the regular tasks of teachers). Tasks and interpersonal leadership are considered by educational researchers to be orthogonal dimensions in the Leaders Behavior Description Questionnaire (Halpin & Winer, 1957). Other studies of leadership have distinguished between participative and directive leadership (Bass, 1981). In participative leadership, subordinates are involved in decision making; but in directive leadership, the leader makes most of the decisions, with little or no consultation with staff members. The participative–directive dimension represents a smaller and separate aspect of leadership compared to the task–interpersonal dimension (Bass, 1981; Eagly, Karau, & Johnson, 1992) in educational research. Participative leadership was defined in this case study as a bottom-up communication strategy in which staff members collaborate in and initiate reform programs, with the encouragement of school management. Directive leadership is defined here as a top-down communication strategy in which school principals give staff members their instructions about how to implement the school reforms, which include what is expected of the staff members and how the tasks are to be done.

A typology of principal leadership resulted in four quadrants: (a) the task top-down approach, (b) the personal bottom-up approach, (c) the personal top-down approach, and (d) the task bottom-up approach, as informed by leadership theory. The typology is defined in this case study to capture the key features of principal leadership during the implementation of change. Specifically, the task top-down approach is characterized as a communication strategy in which the principals set goals and clear guidelines for teachers and give clear instructions about the tasks that are required to implement the reform. The task bottom-up approach is defined as the communication strategy in which staff members proactively initiated reform programs and suggested areas for improvement. Here, the principals avoided setting clear instructions and guidelines to implement the reform programs.

The personal bottom-up and personal top-down communication strategies are interpersonally oriented. These communication strategies emphasize maintaining interpersonal relationships and attempt to foster a spirit of collegiality among teachers in reform implementation. In the personal top-down communication strategy, principals made most of the decisions, and their decision making involved only some consultations with teachers.

Informed by complexity theory and studies on leadership, this study explores the communication strategies of principals and posits that principal communication strategies will vary by the contextual factors of schools. The language of instruction and school band can have a conjoint influence on the communication strategies because of the differences in the language environment and the ability of students. Schools in which 80% of the students fulfill the competencies in English can use English as the medium of instruction (EMI). EMI schools are more popular among parents and students than are schools that use Chinese as the medium of instruction (CMI). Therefore, EMI schools have a higher proportion of students with better academic preparation to learn in English than have CMI schools. Variations in student ability may call for different pedagogical styles. For example, team teaching (i.e., two class teachers) may be more suitable for students with less academic preparation. This provides a context for enhanced interaction among teaching staff. Based on the analysis, there are two research questions:

*Research Question 1:* What are the communication strategies of school principals in reform implementation?

*Research Question 2:* Do the communication strategies of school principals vary according to the contextual factors of the school?

## Method

### Participants

In-depth interviews aimed to assess the communication strategies of the principals in reform implementation and addressed Research Questions 1 and 2. In-depth

interviews were conducted from January to April 2006. The author conducted in-depth, audiotaped interviews of 60 to 90 minutes with 21 high school principals who came from 18 school districts in Hong Kong. At least 1 high school principal from each educational district participated in an interview. More than 1 principal was invited for an in-depth interview in districts that had a higher student population and in districts that had more secondary schools.

## **Independent Variables**

The independent variables included the school type, school band, and language of instruction. There are three types of secondary schools in Hong Kong: (a) government schools, (b) aided schools, and (c) direct-subsidy scheme schools. The teachers in the government schools are civil servants in the Hong Kong Special Administrative Region (HKSAR) government. Aided schools receive subsidies from the government, but the teachers are not government employees. Direct-subsidy scheme schools have greater flexibility in school management and receive comparatively fewer subsidies from the HKSAR government than do aided schools.

There are three levels of school banding in the territory: Band 1, Band 2, and Band 3. Band 1 schools have more than 80% of students whose scaled internal assessment results achieved the highest level. Band 2 schools have more than 80% of students whose assessment results achieved the second-highest level. Band 3 schools have more than 80% of students whose assessments results place them in the third level. The allocated bands of the students who are admitted determine the banding of high schools. Finally, there are two languages of instruction: English and Chinese.

## **Dependent Variables**

Communication strategies are the dependent variables in the in-depth interview. The study participants were asked to describe the communication that took place in the implementation of educational reform. The questions included: How is the education reform being implemented in your school? What is the role of the principal in the reform implementation? The interview responses were transcribed and checked for accuracy. The coding units were statements that contained an independent thought on the communication patterns in reform implementation. The thought units were coded into a typology of communication strategies. Two independent coders counted the number of communication frames. Cohen's kappa was used to assess reliability. The intercoder reliability of the four communication strategies was, as follows: task top-down communication ( $\alpha = .90$ ), personal bottom-up communication ( $\alpha = .95$ ), personal top-down communication ( $\alpha = .92$ ), and task bottom-up communication ( $\alpha = .91$ ).

In the task top-down communication pattern, senior management (i.e., the principal) decides the direction and implementation of the educational reform. The teachers receive instructions from senior teachers and carry out the reform programs. In personal bottom-up communication, teachers initiate the reform program, such as information technology, and discuss it with senior management. Communication in the personal top-down approach involves broad-based consultation in decision making, and middle management takes the lead in reform implementation. Finally, task bottom-up communication involves different communication practices that are implemented for different reform programs. Research questions were tested by chi-square tests.

## Results

Chi-square tests of the communication frames by school type, school band, and language of instruction revealed that communication patterns significantly differed from each other in school type,  $\chi^2 (6 df) = 57.64, p < .01$ ; school band,  $\chi^2 (6 df) = 12.69, p < .01$ ; and language of instruction,  $\chi^2 (3 df) = 35.87, p < .01$ .

In government schools, task bottom-up communication was the most dominant communication pattern (48.1%,  $n = 13$ ). In contrast, task top-down communication (41.4%,  $n = 53$ ) was the most common pattern in aided schools. The personal top-down approach was the dominant communication pattern (61.1%,  $n = 11$ ) in direct-subsidy scheme schools, followed by task top-down communication (33.3%,  $n = 6$ ) and personal bottom-up communication (5.6%,  $n = 1$ ). The task bottom-up communication pattern was not used in direct-subsidy scheme schools.

Principals in aided schools reflected on what they did in implementing school reform. Some opined that in the implementation of moral and civic education, principals set the goals to promote patriotic education in the school curriculum, and the clear instructions that teachers were given about what kinds of activities would be organized during the school year. The following excerpts indicate that for the reading program, the principal and the deputy principal decided the topic:

Most likely, it is in accordance with the framework given by the government. At the administration meeting, that is, the school-based management committee meeting, we always discuss what our expectation to a certain project and then what the school can do. It is only a broad direction. After that, the teaching affairs committee would further discuss it. The members of this committee are the heads of each department.

Principals in government schools suggested that task bottom-up approach facilitate efficient implementation of school reforms. Here, the principals would take a back seat in the implementation of school reform programs, as the following excerpt indicates:

I avoid setting clear instructions and guidelines to implement the English-language reading-to-learn program in the classroom setting, and let the English teachers ascertain the needs and progress of students in the reading programs.

With respect to school band, task top-down communication was most prevalent (46.3%,  $n = 19$ ) in Band 1 schools. In contrast, task top-down communication (35.4%,  $n = 28$ ) and task bottom-up communication (35.4%,  $n = 28$ ) were equally dominant in Band 2 schools. Task top-down communication was dominant (32.1%,  $n = 17$ ) in Band 3 schools. Personal bottom-up communication was used least often (18.9%,  $n = 10$ ) in Band 3 schools.

Principals in Band 1 schools reflected on task top-down communication in implementing moral and civic education, as the following excerpts suggest:

Regarding moral and civic education, we do have a course tailor-made for this area, which is included in the formal syllabus. Apart from that, we have included some moral and civic teaching materials during class-teacher lessons and it was also integrated into some other subjects, such as integrated humanities and ethics.

Another principal from a Brand 3 school added that moral and civic education was an important area in school reform, and the principal decided the topic of the year.

We have two committee groups. One is called civic education. There are two units under this group: life education and religious ethics. The principal and deputy principal would gather together to discuss what the topic should be or what we could do in this year. When we have the topic, we would let the groups to have their own discussion. The teachers have many opinions.

The language of instruction also made a difference in the communication pattern during reform implementation. Task top-down communication (36.1%,  $n = 13$ ) and personal top-down communication (38.9%,  $n = 14$ ) were equally dominant in EMI schools. However, task top-down communication (37.2%,  $n = 51$ ) and task bottom-up communication (33.6%,  $n = 46$ ) were relatively more dominant communication patterns in CMI schools.

Some EMI school principals opined that a personal approach would maintain interpersonal relationships among teachers. Principals consulted with teachers before making the final decision, as the following excerpts show:

With regard to project learning, if there were courses that were provided by tertiary educational institutions that fit the needs of school development, the principal would recommend or subsidize the teacher who was interested in that particular area to take the course.

Other CMI school principals suggest that a task bottom-up approach is more prevalent in implementing school reforms, as reflected in the following excerpt:

As for the use of IT, there are many limitations since the students have different social economic backgrounds. More than half of the students have IT access at home. We develop a platform for IT teaching and electronic assignments. If the students do not have computers at home, they can finish their assignments in the computer laboratory at school.

## Conclusion and Discussion

Overall, the results show that task-oriented communication strategies were more prevalent among government schools, aided schools, Band 1 schools, and Band 2 schools. This may be attributed to the nature of the education reform and the local Chinese culture. Education reforms were launched in Hong Kong in 2000 that involved changes in curriculum and assessment mechanisms. The number of reform programs and the complexity of their implementation in different types of high schools required clear directions and instructions from the district administrators of the EMB and the principals. Some principals commented that the reform programs came one after the other and that the frontline teachers were simply following the guidelines set out in the blueprint in their daily work. Frontline teachers were too busy with their teaching, administrative work, and extracurricular duties. With more duties and limited time, many teachers simply wanted clear instructions on how to get the work done. Second, Chinese culture may affect the working practices of high schools, with the transfer of the political sovereignty of Hong Kong from the United Kingdom to China. The moral and civic education of the curriculum reform partly aims at strengthening the identification of students with Mainland China through their participation in cultural activities and academic exchanges. Chinese values are cherished in the reform programs, and these may indirectly be affected by the working culture in high schools, which emphasizes respect for authority that in turn facilitates the adoption of a top-down strategy in communicating reform programs to frontline teachers. Taken together, the busy routines of teachers, the implementation of various reform programs, and the culture of respect for authority may have been conducive to the prevalence of top-down communication strategies.

As suggested by complexity theory, school contextual factors affect the interactions among teachers. In this case study, school band and school type were the contextual factors that affected the communication strategies of principals in reform implementation. Statistical analyses revealed that although top-down communication is the most prevalent strategy, a personal approach of caring and understanding may facilitate better communication and interaction among colleagues in reform implementation. Better coordination and interaction facilitate successful self-organizing to cope with the uncertainties in reform implementation. An example is school downsizing and the closures that triggered widespread discontent among teachers as well as the demonstration of 10,000 teachers in January 2006. A personal leadership approach may help to address the grievances of teachers in reform implementation.

## Note

1. Since July 1, 2007. The Education and Manpower Bureau (EMB) has been renamed as Education Bureau (EDB).

## References

- Anderson, L. W., & Shirley, J. R. (1995). High school principals and school reform: Lessons learned from a statewide study of project re: learning. *Educational Administration Quarterly*, 31(3), 405-423.
- Bacharach, S. B., Bamberger, P., & Mitchell, S. (1990). Work design, role conflict, and role ambiguity: The case of elementary and secondary schools. *Educational Evaluation and Policy Analysis*, 12, 415-432.
- Bass, B. M. (1981). *Handbook of leadership: A survey of theory and research*. New York: Free Press.
- Benveniste, G. (1989). *Mastering the politics of planning*. San Francisco: Jossey-Bass.
- Brown, F., & Hunter, R. C. (1998). School-based management involving minority parents in shared decision making. *Urban Education*, 33(1), 95-122.
- Chubb, J. E. (1988). Why the current wave of school reform will fail. *Public Interest*, 90, 28-49.
- Corcoran, T. B., Walker, L. J., & White, J. L. (1988). *Working in urban schools*. Washington, DC: Brookings Institution.
- Datnow, A., & Castellano, M. E. (2001). Managing and guiding school reform: Leadership in success for all schools. *Educational Administration Quarterly*, 37(2), 219-249.
- Deal, J. E., & Celotti, L. D. (1980). How much influence do (and can) educational administrators have on classrooms? *Phi Delta Kappan*, 61(7), 471-473.
- Dow, I. I., & Whitehead, R. Y. (1980). *Curriculum implementation study, physical education K-6: Personal well being*. Unpublished report, University of Ottawa, Ontario, Canada.
- Dreeban, R. (1973). The school as a workplace. In R. Travers (Ed.), *Second handbook of research on teaching* (pp. 450-473). Skokie, IL: Rand McNally.
- Eagly, A. H., Karau, S. J., & Johnson, B. T. (1992). Gender and leadership style among school principals: A meta-analysis. *Educational Administration Quarterly*, 28(1), 76-102.
- Education Commission, Hong Kong Special Administrative Region of the People's Republic of China. (2004, December). *Progress report on the education reform* (Vol. 3). Hong Kong: Author.
- Fullan, M. G. (1994). Implementation of innovations. In T. Husen & T. N. Postlethwaite (Eds.), *International encyclopedia of education* (2nd ed., pp. 2839-2847). Oxford, U.K.: Pergamon.
- Fullan, M. G. (1999). *Change forces: The sequel*. London: Falmer.
- Fullan, M. G. (2001). Understanding change. In M. Fullan (Ed.), *Leading in a culture of change* (1st ed., pp. 5-7). San Francisco: Jossey-Bass.
- Fullan, M. G. (2005). *Leadership and sustainability*. Thousand Oaks, CA: Corwin.
- Fullan, M. G. (2006). The future of educational change: System thinkers in action. *Journal of Educational Change*, 7, 113-122.
- Fullan, M. G., & Stiegelbauer, S. (1991). *The new meaning of educational change*. New York, Columbia University: Teachers College Press.
- Hallinger, P., & Anast, L. (1992). The Indiana Principal Leadership Academy assessing school reform for principals. *Education and Urban Society*, 24(3), 410-430.
- Halpin, A. W., & Winer, B. J. (1957). A factorial study of the leader behavior descriptions. In R. M. Stogdill & A. E. Coons (Eds.), *Leader behavior: Its description and measurement* (pp. 39-51). Columbus: Ohio State University, Bureau of Business Research.
- Houts, P. (1975). The changing role of the elementary school principal. *The National Elementary School Principal*, 55(2), 62-72.

- Howe, W. (1994). Leadership in educational administration. In T. Husen & T. N. Postlethwaite (Eds.), *International encyclopedia of education* (2nd ed., pp. 3276-3284). Oxford, U.K.: Pergamon.
- Leithwood, K. A., & Montgomery, D. J. (1982). The role of the elementary school principal in program improvement. *Review of Educational Research*, 52, 309-339.
- Louis, K. S., & Miles, M. (1990). *Improving the urban high school*. New York: Teachers College Press.
- Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecot, R. (1988). *School matters: The junior years*. London: Paul Chapman Publishing.
- Murphy, J. (1989). Principal instructional leadership. In L. S. Lotto & P. W. Thurston (Eds.), *Advances in educational administration* (Vol. 1B, pp. 162-200). Greenwich, CT: JAI Press.
- Murphy, J. (1990). Effective school management. In T. Husen & T. N. Postlethwaite (Eds.), *International encyclopedia of education* (Supplementary Vol. 2, pp. 73-77). Oxford, U.K.: Pergamon.
- Murphy, J. (1994). Redefining the principalship in restructuring schools. *NASSP Bulletin*, 78(560), 94-99.
- Murphy, J., & Louis, K. S. (1999). Introduction: Framing the project. In J. Murphy & K. S. Louis (Eds.), *Handbook of educational administration* (pp. xxi-xvii). San Francisco: Jossey-Bass.
- Neufeld, B. (1997). Responding to the expressed needs of urban middle school principals. *Urban Education*, 31(5), 490-509.
- Neuman, M., & Mohr, N. (2001). Cracking the mathematics and science barrier: Principles for principals. *NASSP Bulletin*, 85(623), 43-52.
- Peterson, K. D. (1990). Effective school principals. In T. Husen & T. N. Postlethwaite (Eds.), *International encyclopedia of education* (Supplementary Vol. 2, pp. 5268-5273). Oxford, U.K.: Pergamon.
- Willower, D. J. (1991). Micropolitics and the sociology of school organizations. *Education and Urban Society*, 23, 442-454.

**Wanda Siu** obtained her PhD from the University of Minnesota in 2004. Her major field of study was mass communication, with a minor in educational psychology; she also obtained a certificate of achievement in educational statistics from the EdPsy program. At present, she teaches multivariate analysis in communication, globalization, applied communication research, and mass communication theories.