Taiwan’s middle schools are facing several interrelated challenges, including low birthrate, lack of teacher empowerment, and need for school-based curriculum development. As a result, schools increasingly emphasize market competitiveness, the democratic participation of teachers in decision-making, and the growth of professional learning, with organizational metaphors serving as an important mechanism for diagnosing the needs of schools (K. Smith, 1992). Community metaphors, meanwhile, can help school leaders perceive the importance of individual and team learning (Handy, 1995), teacher self-efficacy (Diem et al., 2018; Van Veen et al., 2017), teacher introspection (Vanlaere & Devos, 2018), and teacher job satisfaction (Fernandez & Moldogaziev, 2015) while also providing a conceptual system for school reform (Lakoff & Johnson, 1980). School leaders’ use of organizational metaphors to strengthen social justice practice helps to identify services and resources for all students (Arnold & Carwford, 2014). It also promotes the development of school organization theory (MacKechnie & Donnelly-Cox, 1996), which creates greater momentum for reform (Scribner et al., 1999) and expands learning opportunities (Diem et al., 2018).

Sergiovanni (1994) emphasized that the identity of an educational administration should be rooted in organizational knowledge and that the use of metaphors should follow an understanding of the context to stimulate organizational learning and urge knowledge innovation (Cornellissen, 2005). Therefore, the use of metaphor to understand human behavior contributes to the exploration of organizational theory while also expanding research on teaching and learning (Certi, 2006). Organizational metaphors are also often used by people to interpret meaning (Tait-McCutcheon & Drake, 2016) and frame perceptions of their own experiences. Simultaneously, through school leaders’ creation of new perspectives, metaphors can also contribute to change management within organizations. In other words, organizational metaphors shape people’s cognition. Promoting a mutual understanding of their meaning, therefore, represents a path toward organizational change (Marchak, 1996), and school leaders’ use of organizational metaphors to solve problems is closely related to school reform.

As stated by Morgan (1986, 1997, 2006), school leaders should use multiple organizational metaphors to explore the development of organizational theory. However, they should...
also be critical of each metaphor to understand its advantages and disadvantages, and be aware that each metaphor may be perceived by stakeholders as either assisting or resisting change (Doving, 1996). Accordingly, their complex learning competencies can help to explore the complementary relationship between multiple metaphors, enhance the advantages of metaphors for change, and eliminate their disadvantages (Earle & Kruse, 1999). This will enable school leaders to use metaphors to develop organizational theory, lead schools to make effective reforms, and improve students’ learning achievements (Fernandez & Moldogaziev, 2015).

The construction of school organization theory is rooted in the power of change, meaning that the research method for organizational metaphors is more qualitative than quantitative, frequently involving case studies (Van den Hoven & Litz, 2016). However, research on the ability of organizational metaphors to stimulate organizational change requires the integration of qualitative studies with quantitative studies (Morgan & Zohar, 1998). Therefore, it is first necessary to explore the effect of the complementary relationship between organizational metaphors on school change, that is, if leaders only use metaphors with weak momentum, the weak metaphors may be overshadowed by other, stronger ones, negating their impact. Conversely, metaphors with strong momentum reinforce one another, leading to a synergy between the change in momentum and the construction of the most advanced organizational theory. This leads school members to undertake greater responsibilities (Walker, 2018), promoting school effectiveness (Hall & McHenry-Sober, 2017).

Literature Review

Meaning of Metaphors

Metaphors are presented in the form of language to both formulate and describe concepts (Duru, 2015) and promote the understanding of concepts through imaginative use of examples that make the concepts more accessible (Lakoff & Johnson, 1980). For example, a building structure can be used as a metaphor for an organization. Using the logical structure of raising the levels gradually, organizational theory can be constructed. In addition, metaphors can capture how individuals frame problems (Schon, 1979). Metaphors frame how individuals perceive meaning (Arnett, 1999) to promote the perception of organizational theory (Lakoff & Johnson, 1980). Therefore, the ability of metaphors to create meaning can play a key role in organizational change (Christensen & Wagoner, 2015).

In addition, metaphors allow the transference of knowledge from familiar to unknown domains (Tsoukas, 1991), reshaping linguistic meanings and how people conceptualize their surroundings (Bialostok, 2014). Metaphors affect how people structure conceptual systems and how they interpret meaning (Short, 2001). That is, metaphor is a mechanism to understand the reality of an object; it involves constructing a special concept via a metaphorical comparison with similar things to increase understanding of the object (Cutright, 1999). Simultaneously, by enriching the imagination (Miller & Fredericks, 1988), metaphoric meanings and their different interpretations construct people’s inner lives (Cerıt, 2006).

The Application of Metaphors in the Development of School Organization Theory

Metaphor application emphasizes the interpretation of human life forms and action changes, and aims to stimulate the exploration of the development of school organization theory (Sergiovanni, 1994). The first question to ask is, “How does your work organization operate?” (Ryman et al., 2009). This indicates that the development of school organization theory can use loosely coupled metaphorical framing (Rowan, 2002). In the context of a school, the question suggests that the principal has room to control the teachers, but that the teachers can also question the principal’s position based on their professional autonomy.

Metaphors have been widely used in school organizations, especially the eight metaphors proposed by Morgan (1986, 1997, 2006): machine metaphor, organism metaphor, brain metaphor, politics metaphor, cultural metaphor, cultural cage metaphor, self-transformation metaphor, and ugly metaphor. These metaphors have an influence on the development of schools (Earle & Kruse, 1999). The machine metaphor emphasizes the professional division of labor, hierarchy of office, and a set of rules, whose driving force of reform comes from the guidance direction of clear rules. Its advantage is that it emphasizes control and prediction to improve efficiency, whereas its disadvantage is that rigid rules lack flexibility and are easy to be eliminated when the environment changes (Earle & Kruse, 1999). The organism metaphor emphasizes the survival of adaptation to the environment, and it considers the individual and organization’s needs. Its driving force of reform comes from recognizing the importance of the environment. Its advantage is that it can explore the relationship between the organization and the environment and pay attention to the survival of the organization. Its disadvantage is that it ignores the human nature of pursuing interests and compresses the meaning exploration of self-construction (Pauchant, 1995). The brain metaphor emphasizes the quality of self-control decision-making and information processing is promoted through group learning, and its driving force of reform comes from value exploration of direction-setting. Its advantage is that it strengthens the awareness of organizational learning ability, and its disadvantage is that it ignores the necessity of conflict. The culture metaphor emphasizes the entity construction of sharing and interaction and people’s choice of lifestyle. Its driving force of reform comes from people’s ability to create reality. Its advantage is that it can provide a reference framework for
experience and wisdom, and its disadvantage is that it is easy to form the myth of concentration of power. The politics metaphor emphasizes that the pursuit of interests is that human nature will produce conflicts of interests, while power exercises to resolve conflicts of interest. Its driving force of reform comes from creating effective reform plans. Its advantage is that probing resource allocation can promote the sustainability of reform, whereas its disadvantage is that it will destroy the trust relationship (Earle & Kruse, 1999). The cage metaphor emphasizes beyond the limitation of perspective and the trap of thinking, and the driving force of reform comes from the decoding of the relationship between the organization and morality. Its advantage is that it can facilitate the detection of obstacles to the path of reform, and its disadvantage is that it puts too much effort into the exploration of assumptions. The self-transformation metaphor emphasizes that the dynamic of urging continues self-creation through the attention of tiny changes in the external environment. Its driving force of reform comes from the contradiction harmonization of the dialectical process (Schoenborn et al., 2016). Its advantage is that it will promote continuous communication and its disadvantage is that the change is too idealistic. The ugliness metaphor emphasizes the challenge of organizational domination and avoids people living in a state of being crushed. Its driving force of reform is rousing people’s motivation to challenge hegemony and reduce morbidity. The advantage is that the pursuit of social justice can respond to the nature of education, and the disadvantage is that the challenger is exposed to the risk of being suppressed. As a community metaphor, the additional metaphor has been widely used in the field of educational administration (Sergiovanni, 1994). It is another metaphor worthy of further study. The community metaphor emphasizes mutual trust among members of the organization (Jenkins, 2012; White, 2002). Its driving force of reform comes from the support of intelligence. Its advantage is that it can arouse professional responsibility, and its disadvantage is that it places too much emphasis on people’s ability to continue to reform (Earle & Kruse, 1999).

The following metaphors related to organizational change can strengthen the exploration of the dominant position of school members to enhance the motivation of reform. The neuroticism metaphor addresses the dark side of the organization to avoid members’ negative thinking, partial execution, and self-centered destruction (Robinson & Tamir, 2005). It has the advantage of resolving anxiety and generating motivation to break through the status quo, whereas its disadvantage is that excessive anxiety produces morbidity (Kets De Vries & Miller, 1984). The chameleon metaphor emphasizes the agility of the self-role to change the organizational structure to strengthen the protective role in the face of environmental crises (Bawa, 2017). Its advantage is that communication can be integrated into a variety of new environments, whereas its disadvantage is that it is fickle and unprincipled (Remenyi et al., 2005). The temple metaphor emphasizes the meaning of symbols and solves problems through rituals, celebrations, and beliefs. Its advantage is that it can offer special value and establish a high-profile image, and its disadvantage is that the ceremony becomes a placebo for failure (Wolf, 2002). The jungle metaphor emphasizes that people in the organization are selfish and that people obey the law of the jungle, which evokes participation in the game of the survival of the fittest. Its advantage is that the survival advantage can practice the idea, whereas its disadvantage is that the loser secretly tries to sabotage it (Kendall & Kendall, 1993).

Furthermore, the fact that education treats students as commodities is highly controversial, but it may drive the quality of schools, so it is still under discussion. The factory metaphor emphasizes the rationality of technology to enhance quantitative production (Graham, 2013; Raymond, 1993). The consumption metaphor treats students and parents as customers, responds to their voices, and wins their favor to make exchanges of value (Dagbovie-Mullins, 2011; Fischer, 2011). The media metaphor emphasizes the publicization of school quality through media vehicles (Örtenblad et al., 2016). The global brain metaphor emphasizes the innovation of big data management and public opinions while ignoring the educational needs of students in the school (Oswick & Grant, 2015).

When it comes to the relationship between organizational metaphors and school reform, scholars widely accept the viewpoint of Morgan (1986, 1997, 2006). Morgan emphasizes that the stimulus for change within organizational metaphors originates from criticism of existing practices and people’s imaginative use of new metaphors to reflect their views (Morgan, 1993). Accordingly, it is necessary to explore the advantages and disadvantages of each metaphor, their interdependence, and their ability to improve on other metaphors; this will strengthen the development of school organization theory and the competence needed for utilizing comprehensive resources efficiently and bringing about change (Arnold & Crawford, 2014). Identifying untapped resources for school change (Lackney, 2005) and promoting the complementary relationship between organizational metaphors can stimulate successful changes in schools (Van den Hoven & Litz, 2016).

While organizational metaphors contain comprehensive resources for school change, machine metaphors are focused on bureaucracy, which has long been considered as representing the pursuit of maximum efficiency. Bureaucracy is characterized by a clear division of labor, a hierarchy of authority, prescribed behavior, and specialized job training (Earle & Kruse, 1999), and it focuses on performance evaluation and top-down school change. In particular, the structural configuration in which there is a special division of labor with an emphasis on professional roles is known as the One Best System (Tyack, 1974). To date, even in the era of
globalization, performance evaluation still represents a key task in school operation (Ball, 2006). It should be noted that school decentralization also requires bureaucracy to allocate the workforce to facilitate multiple leadership roles, enhancing steady progress during school change (Bush, 2019). In turn, this promotes school effectiveness (Fullan, 2016).

Therefore, the use of multiple metaphors to explore the development of school organization theory should include a focus on the role of bureaucracy, as well as the complementary relationship between multiple metaphors, in achieving school change. By closely linking bureaucracy with the changing behaviors of educators, we can facilitate positive learning outcomes (Grissom et al., 2015).

**Research Methodology**

The study of this metaphor often uses a mixed research method, which is a research design that considers both quantitative and qualitative data. The researchers designed their questionnaire based on the metaphors summarized in the literature through the data of a questionnaire survey, sought to understand the metaphors used by more than 10% of the participants, and established the metaphors that generate change momentum synergy (Morgan & Zohar, 1998). Then they chose these metaphors and conducted qualitative interviews with the school’s stakeholders to explore the meaning of metaphor and its positive and negative effects. Afterward, researchers identified complementary relationships between metaphors to explore the comprehensive resources of multiple metaphors that can synergize the momentum of change (Arnold & Crawford, 2014).

Based on the above discussion, the application of metaphor is an extension of qualitative research methods in which the subject identifies the concept that merges his or her own experiences, reflecting the subjective meaning through the external object (Brink, 1993). This process creates a new image of school organization designed to strengthen the interpretation of symbolized meaning (Inbar, 1996); this is followed by a process of meaning-sharing by metaphorical expressions, which ensures a new view of coherence and demand for metaphor while also verifying the knowledge of qualitative research to establish a well-grounded theory (Miller & Fredericks, 1988). Utilizing a conceptual framework based on Morgan and Zohar’s (1998) organizational metaphors, Van den Hoven and Litz (2016) conducted qualitative research on university professors designed to evaluate their experience with a new program and its influence on change processes. Arnold and Crawford (2014) have also emphasized the value of conducting qualitative research to explore the use of metaphors for educational leadership. However, qualitative research into organizational metaphors and organizational change phenomena fails to provide any deep insights. Therefore, Morgan and Zohar (1998) state that it is increasingly important to study change processes in a quantitative manner, especially the effect of an incremental change strategy on overall organizational change. Therefore, research on the effect of organization metaphors on organizational change should be focused on the identification and quantification of the change in momentum. This study uses a mixed-method approach. The quantitative analysis focuses on the change in the momentum of individual metaphors. The qualitative case explores the effects of organizational metaphors on organizational change. Combining quantitative and qualitative results offers deeper insights into the complementary relationship between organizational metaphors and changes in momentum.

**Conceptual Framework**

This study’s questionnaire used percentage to evaluate Taiwan’s middle schools’ reform energy of the 17 metaphors. This study used percentage to assess the change in momentum of each metaphor. Only those showing more than a 10% change in momentum were analyzed. This is attributed to the fact that, as stated by Morgan and Zohar’s (1998) theory of school change, each metaphor must have a change in momentum above a certain level, whereas multiple metaphors must be used in a comprehensive manner before an incremental increase of change in momentum is achieved.

For the remaining metaphors, two or fewer pieces of advice were offered, showing a slightly weaker motivation. It adopted the specified metaphors to assess the role of leadership motivation in promoting school reform (Hernández-Amorós & Ruiz, 2018). The metaphors were all supplemented by comments in the form of responses to open-ended questions, which were then incorporated into the qualitative analysis. Then, the metaphor of quantity and energy that can be multiplied was interpreted to explore the rich and comprehensive resources and expand the kinetic energy of school reform (Christensen & Wagoner, 2015).

Due to the large number of metaphors discussed in the literature, to clarify the research design, this study only selected metaphors widely used in school change discussed in the literature as examples of the conceptual framework, as shown in Table 1.

**Research Questions**

1. **Research Question 1:** Which organizational metaphors lead to incremental increases in momentum for school change?
2. **Research Question 2:** What comprehensive resources are necessary to enable organizational metaphors to bring about incremental change?
3. **Research Question 3:** What organization theory is relevant to the comprehensive resources of a school’s organizational metaphors and has synergy for a change in momentum?
Measures

Questionnaire Content

This study adopted a semi-closed and semi-open questionnaire survey method (Guo, 2012). The researcher designed the first draft of the questionnaire according to the literature, with the research direction and theory then discussed following this process. The multiple-choice questions addressed 17 metaphors to establish content validity: machine metaphor, brain metaphor, organism metaphor, political metaphor, chameleon metaphor, culture metaphor, self-transformation metaphor, cage metaphor, ugliness metaphor, neuroticism metaphor, community metaphor, consumption metaphor, media metaphor, global metaphor, factory metaphor, temple metaphor, and jungle metaphor. The design of the questionnaire sought to lead the respondents to write their views on each metaphor's opportunity to inspire change. Six specialists in education administration were included; 10 middle school members (principals, administrative staff, and teachers) also participated. The questionnaire was designed mainly with reference to the organization theory literature, which ensured its content validity. After the scholars' review, the questionnaire's practicality was enhanced. The Taiwanese scholars of education administration added and deleted the context of secondary school education reform in Taiwan. Meanwhile, the school members evaluated the degree to which the questionnaire was answerable. As is shown by the validity tests, this questionnaire considered the international progress made in both organizational theory and Taiwan's theoretical test in this regard, suggesting that it can be used as a general research instrument to establish expert validity. In addition, after the questionnaire was finalized, the reliability of the questionnaire was established by the method of retest reliability because the questionnaire was composed of multiple-choice questions (Guo, 2012). The middle schools selected by the researchers had 52 members, including the principal, administrative staff, and teachers who had two pre-tests of the questionnaire. After the first pretest, the questionnaire number of the respondents was marked, and a week later, the second pretest was conducted. After comparisons, more than 90% of the respondents had the same answers, demonstrating that the questionnaire has stability and reliability (Guo, 2012).

In addition to questions soliciting the subject's basic data, the questionnaire contained 17 multiple-choice questions and open-ended questions. The multiple-choice questions addressed 17 aforementioned metaphors. The participants were asked to select the metaphors that would match the image of their schools and to fill in meanings for those they selected. For the open-ended questions, the participants were asked to describe the characteristics of their schools and explain their meanings.

Interview

The researcher conducted in-depth interviews using the outline below. These interview questions were designed based on the multiple-choice items of the questionnaire for which metaphors accounted for more than 10% of the person-time of the respondents:

1. Which school change initiative have you been deeply involved in? Why?
2. What metaphors will you apply when participating in change initiatives? For example, machine metaphor, brain metaphor, organism metaphor, political metaphor, or community metaphor?
3. What positive influences do the uses of the above metaphor have on school change?
4. What negative influences do the uses of the above metaphor have on school change?

Samples

Survey Sample

This study focused on public and private middle schools in the Taipei Metro Area (Taipei City, New Taipei City and Keelung City), and the choice of participants included principals, administrative staff, and teachers. Random sampling was used to select participants from three strata.

| Metaphor       | Nature of concept                                           | Anticipated development                                                                                           |
|----------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Machine        | Specialists and guidance direction of clear rules           | Efficiency and countable results of promoting change                                                            |
| Brain          | Quality of self-control decision-making                     | Setting valuable direction for change                                                                             |
| Organism       | Adaptation to the environment                               | Establishing the reform mechanism of survival                                                                   |
| Politics       | Resolution of conflicts of interest                         | Creating effective change plans                                                                                 |
| Culture        | Substantive construction of social interaction               | Change capital guiding experience and intelligence                                                              |
| Self-transformation | Contradiction harmonization of dialectical process        | Power of change to promote coevolution                                                                          |
| Cage           | Beyond the trap of thinking                                 | Diagnosis of obstacles in promoting change path                                                                 |
| Ugly           | Challenges to organizational domination                      | Reform practice of strengthening social justice                                                                  |
| Community      | Mutual exploration of democracy                              | Driving force of change to promote professional responsibility                                                  |
For the first stratum, stratified proportional random sampling work with other parties, the mutual confrontation builds were adopted. The schools were grouped according to type (public or private), and 15% of the schools were selected for the survey. Taipei City had 12 districts and 80 middle schools. Twelve schools were chosen, which was about 15% of the population that were keen to respond to educational change. Conceptually, each district had one school to represent. New Taipei City and Keelung City could also choose representative schools for educational change according to the percentage. For the second stratum, the schools were grouped according to size. For the third stratum, the participants were issued a questionnaire based on the category and size grouping of the schools; 409 valid questionnaires were recovered from 28 schools in the Taipei Metro Area.

**Interview Samples**

To understand how metaphors affect a school’s organizational development, the researcher selected 41 participants from the 409 questionnaire respondents. The participants were those whose qualitative responses provided insights into the effect of organizational metaphors on organizational change. The 36 principals, administrative staff, and teachers provided written informed consent for their participation. In addition, the principals who agreed to be interviewed recommended five parents who were enthusiastically involved in school affairs for interview. Although the selected participants had different roles to play, they all agreed that their schools require changes, and they had taken actions to bring about those changes.

First, the researcher interviewed nine principals (six men and three women). Facing the impact of the low birthrate in Taiwan, they had been deeply involved in developing countermeasures. As the number of potential students decreases, a series of impacts results, such as parents having a wider choice of schools, principals needing to present better teaching performances or administrative innovations to attract students, and the danger that teachers might be transferred to other schools due to the low enrollment rate. These impacts cause a feeling of insecurity among teachers and affect their teaching quality, which might lead to both on-campus and off-campus tension, thereby affecting the principals’ influential power to support new national curriculum guidelines, encouraging teachers to focus on curriculum development, mediating frictions between administrative staff and teachers, and fighting for resources. Their aim was to create change energy.

Second, the researcher interviewed 11 administrative staff (seven men and four women). Four affair divisions (Educational Affairs Office, Student Affairs Office, General Affairs Office, and Counseling Office) are set under the supervision of the principal in middle schools in Taiwan, each playing a different role. As stakeholders, the administrative staff may have a conflict of interest with the principal and may not always accede to the principal’s wishes. The administrative staff were capable of creative thinking and responding effectively to the fast-changing school environment. When implementing changes, they utilized limited resources to help students maximize their learning achievements. They were also willing to invest time and effort to communicate with administrative offices, teachers, and parents to resolve their respective differences and become driving forces in promoting change.

In addition, the researcher also interviewed 16 teachers (six men and ten women). The teachers encouraged their students to embrace their individual attributes and diverse development, to respect peers with different opinions, and to continue to communicate with administrative staff, building mutual understanding and consideration. They often shared with colleagues their experiences and insights regarding professional and curriculum developments, as well as how to access school resources. Through healthy interactions, they were able to build rapport and shared values with colleagues, to improve levels of mutual trust, to formulate strategies for change, and to drive the progress of their schools.

Finally, the researcher interviewed five parents, including three fathers and two mothers. These parents were willing to provide resources through their networks for school change, purchase equipment, and support changes to the development of the curriculum. They were all professionals and willing to contribute their respective expertise to assist their children’s schools.

**Analyses**

The study of metaphors emphasizes the method of equal emphasis on quality, which can be used as the basis for further study of metaphor screening. In this study, 17 school organization metaphors were designed and presented in the form of multiple choice. As the meaning of the metaphor comes from the cognition of stakeholders, open questions were designed to understand the motivation of respondents for the use of a metaphor and the degree to which their cognition of metaphor responds to the significance of literature. The greater the number of metaphors that can be used, the greater the kinetic energy of change it will bring. In this study, the quantity and energy of the metaphor were tested by percentages, and the motivation of reform was judged by the answers to open questions. At least three items were filled in, and the metaphorical interpretation should respond to the conceptual framework before the qualitative analysis was included.

This study’s questionnaire used percentage to evaluate the reform energy of the 17 metaphors. The questionnaire was distributed among 409 respondents, and two or more options could be chosen for each item. The total number of responses was 596, and all 17 metaphors received responses. This study used percentage to assess the change in momentum of each metaphor. Only those showing more than a 10% change in
momentum were analyzed. Consequently, only the machine metaphor, organism metaphor, brain metaphor, politics metaphor, and community metaphor with a greater than 10% change in momentum were selected for further analysis. Also, all the open interpretations for the five metaphors have more than three points and conform to the conceptual framework. They were used with strong motivation. The five metaphors were all supplemented by comments in the form of responses to open-ended questions, which were then incorporated into the qualitative analysis.

The researcher interviewed school principals, administrative staff, teachers, and parents about various situations related to school changes, focusing on those metaphors with more than a 10% change in momentum. The researcher conducted further exploration of the underlying meanings of the metaphors by asking more questions and carrying out in-depth analysis to understand the positive and negative influences of each metaphor. The researcher then conducted an inductive analysis for those that received the same responses from participants in different positions and used integrated approaches to establish a synergic relationship, understand the synergistic effects of their change energies, and explore school organization theories. Moreover, only the stakeholders who had the same interpretation of the effects of organizational metaphors on organizational change were subjected to further analysis, to strengthen the trustworthiness of the data analysis.

Results

This research involved quantitative analysis and includes metaphors that were selected by more than 10% of the respondents. These people all have opportunities for metaphorical change. The metaphors were then incorporated into qualitative research, analyzed by topic classification, and discussed.

Quantitative Analysis

As Supplemental Appendix A shows, the 17 school organization metaphors were selected by participants a total of 596 times. These selections represented more than 10% of the total selections; they are shown in descending order, accompanied by the change in energy, as follows: machine metaphor (22.48%), brain metaphor (11.74%), organism metaphor (10.74%), politics metaphor (10.40%), and community metaphor (10.07%). It should be noted that this study did not discuss the findings of metaphors that represented less than 5% of the total selections. This study found that the machine metaphor played a prominent role in changes. In addition, the brain metaphor, organism metaphor, political metaphor, and community metaphor also possessed a substantial change in momentum, showing that they can be important for generating change.

Qualitative Analysis

This research examined quantitative research to discover metaphors that were selected by more than 10% of the people to facilitate the construction of the relationship between metaphors and make sure change is energized. Therefore, this study targeted five metaphors, including machine, organic, brain, political, and community; collected data through interviews; conducted a qualitative analysis; and explored the advantages and disadvantages of each metaphor. This process was needed by examining the number of people who put forward the advantages and disadvantages, classifying the metaphors by theme, and calculating the number of times each theme appears among the stakeholders, such as principals, administrative staff, teachers, and parents. Therefore, each theme that is sufficient to represent the phenomenon of the metaphor was applied to solve the problem, as Supplemental Appendix A shows.

As illustrated in Supplemental Appendix B, successful school reform requires that the parties concerned each understand the metaphors and that the principals, administrative staff, teachers, and parents show an increasingly convergent understanding of the cognitive meaning of reform under both the positive and negative influences of metaphors. This indicates that they can be taken as a reform assessment mechanism for the mutual understanding of metaphors. However, it is important to point out that parents support increased school participation. Therefore, to prevent parents from becoming a variable against school reform, at least one parent and one of the school members who share a similar understanding were included in the study.

Table 2 presents the respondents’ relevant background information and is described with a guarantee regarding the reliability of the research results in the presentation of the evidence. Parts of the in-depth interview data were selected as examples of the research results.

Machine metaphor. The machine metaphor emphasizes a clear division of labor, well-planned promotion, orderliness, and legal authority. Schools are official structures, and it is important to have stable and predictable processes. Each procedure is set up to meet the targeted deadlines, and departments both perform their specific tasks and divide the workload based on their departments. Each department takes ownership of its role and follows a rigorous set of rules. After discussions and unifications, decisions are made in a top-down manner by the hierarchical administrative levels. The instructions on how to execute the plans are then provided to allow a unified management of school affairs and to help increase efficiency and improve productivity. The goal is to be recognized as a good school. One principal said,

School has daily routine work and follows standardized operating procedures. The smooth operation of school affairs depends on the talent-oriented employment. (H2U5)
An administrative staff said,

We have to carry out tasks step-by-step to increase efficiency, and it’s important to have stable and predictable processes. (A4U7)

When school members are required to repeat the tasks every day, there is no flexibility or creativity. Moreover, the repeated working cycles make the system rigid and inhumane. Any trivial matters must go through the official channels, and the weekly recurring tasks leave them feeling exhausted. When students’ various needs arise at the same time, school members do not have the flexibility to look after these students due to the rigidity of the operational procedures imposed on them. As a result, parents become

### Table 2. Description of the Background of the Subjects.

| Identity         | Gender | Background                                                                 | School code | Code used in findings |
|------------------|--------|----------------------------------------------------------------------------|-------------|-----------------------|
| Principal        | F      | Students’ parents have high socioeconomic status and value students’ academic achievements | U4          | H1U4                  |
| Principal        | F      | Values diverse student development over academic performance               | U5          | H2U5                  |
| Principal        | M      | Values interaction between schools and communities and makes local culture main axis of curriculum | U6          | H3U6                  |
| Principal        | M      | Led teachers to develop marine education school-based curriculum based on local characteristics | R2          | H4R2                  |
| Principal        | M      | Created competitive projects and fundraised for school                     | R3          | H5R3                  |
| Administrative staff | F     | Chinese language teacher and part-time administrator; believes school focuses too much on policies and regulations for efficiency | U1          | A1U1                  |
| Administrative staff | F     | Senior social science teacher and part-time administrative staff; believes school progress and effectiveness depend on mutual peer support | U3          | A3U3                  |
| Administrative staff | F     | Senior social science teacher and part-time administrative staff; thinks that institutionalization can combat unnecessary resource depletion | U7          | A4U7                  |
| Administrative staff | F     | Natural science teacher and part-time administrative staff; believes culture of teachers shielding one another hinders school progress | U8          | A5U8                  |
| Administrative staff | M     | Chinese language teacher and part-time administrative staff; believes teachers’ infighting hinders professional development | U9          | A6U9                  |
| Teacher          | F      | Social science teacher; believes school leaders provide teachers with professional autonomy and can promote professional development | U10         | T1U10                 |
| Teacher          | F      | English teacher who serves as Teacher Committee leader; believes high sense of peer trust can lead them to confront impact of education reform together | U11         | T2U11                 |
| Teacher          | M      | Senior math teacher; feels care and empathy from peers                     | U12         | T3U12                 |
| Teacher          | F      | Leader in natural science; believes peer sharing can improve teaching profession | R7          | T4R7                  |
| Teacher          | M      | A social science teacher who thinks that educational leaders exaggerate the effectiveness of the community in the professional development of teachers | R8          | T5R8                  |
| Teacher          | M      | Chinese language teacher; believes peers compete for personal interests    | R9          | T6R9                  |
| Teacher          | M      | English teacher; believes departments are independent and lack horizontal connections | R10         | T7R10                 |
| Parent           | F      | Parents Committee leader; helps school obtain social resources and supports extracurricular activities | R4          | P1R4                  |
| Parent           | M      | Parent of an integrated education student; pays attention to suitability of school curriculum and facilities for special children | R5          | P2R5                  |
discontented with the school, while the school members’ sense of purpose and meaning dwindles. One principal stated.

Layered avoidance of responsibility happened in some grey areas and buck-passing means that no one is willing to deal with official documents; it therefore has negative impacts on efficacy. (H4R2)

An administrative staff member said,

People at the top of the hierarchy often deliver instructions without much compassion and tend to be arbitrary when dealing with issues. For example, to ensure students’ safety during the school’s anniversary celebration, the director of the Student Affairs Office did not allow new plans. It becomes a routine activity, rather than a meaningful education activity. (A2U2)

**Brain metaphor.** The school is compared with a human brain. Each department in the school has its own function (neuron), but they are all closely connected. For the school to function as normal, the departments perform communications within the complicated network and make decisions based on selected information from the communications, thus boosting creativity and innovation. Information may seem similar, but its nature and manner of use are different. While departments are responsible for different tasks, the processes of brainstorming and exchange mean the information is also filtered and interpreted. Therefore, the brain metaphor emphasizes the close relationship among different departments or school members (neurons). School leaders also establish networks and relationships with school members to improve the functions of each department. One teacher stated,

We rebuild close relationships with each other; establish our own self-determination mechanisms to respond to the situation and school’s needs. (T2U11)

One principal claimed,

When changes occur, each department shows different responses (neuron) and switches the connected information to plan matters. (H5R3)

However, using a brain metaphor could also hinder high-level thinking. School members rely too readily on inertia information when faced with complicated environments. When one department disrupts the assessment process, crises arise within these connected networks, influencing decision-making. Each office has its own tasks and minds its own business, and different offices are reluctant to support one another. Because of this lack of horizontal connection and willingness to collaborate and cooperate, a number of important problems remained unsolved. An administrative staff explained,

Just like the hippocampus is responsible for memories and the amygdala controls emotions—each part of the brain has its own distinctive function, and the departments lack mutual assistance. (A8U9)

A teacher said,

For example, the Office of Academic Affairs is like the neuron controlling rational thinking, the Office of Student Affairs is like the neuron controlling motion, and the Office of Counselling is like the neuron controlling emotion. Due to irrelevancy and competition for the right to control, these offices are not willing to support each other. (T7R10)

**Organism metaphor.** The school is viewed as a space where each individual and group intertwine, forming interdependent relationships. Schools seek a balance between individuals’ goals and groups’ goals, and respond to changes in the environment to improve their adaptability. Some species can create favorable conditions and offer insights into opportunities, as well as being able to find better opportunities for survival. Species compete and cooperate with each other to deal with environmental changes. When an organism metaphor can help a species to reach a balanced survival relationship, then its function will be more stable. A teacher clarified,

Like each species seeks the meaning of its survival and only the fittest can survive, the survival environment for the shared species is clear. We have our own space for diversified innovation. (T1U10)

An administrative staff member explained,

At the same time, as a dynamic balance, we are interdependent on each other, mutually supplementing growth, providing checks and balances, and protecting each other. (A3U3)

The organism metaphor encourages species to impose self-limitation and stay in their comfort zone. When species do not adapt to their environment, they face a crisis of elimination and abrupt changes can appear. The incompetent species look for a way to survive, carry out attacks irrationally like wild animals, bring catastrophes to the school organism, and destabilize the school’s operations. Educators (species) are partial and do not allow others to invade their living circle. When some teachers fail to adapt to the environment and face elimination, another group of teachers will resist the elimination mechanism and destroy the organism’s environment. Students’ rights to learning are ignored easily. An administrative staff member noted,

Because it’s difficult to build an elimination mechanism, as bad money drives out good, abrupt changes can appear. It becomes difficult to restore balance. When a culture of collective degeneration takes shape, the rot spreads and damages the healthy constitution of the school. (A5U8)
A parent explained,

The school obeys the law of the jungle; parents with higher socioeconomic status are more valued in their suggestions for curriculum arrangements, and their children’s academic performance is more prominent. This results in the eternal power of the strong. (P2R5)

Political metaphor. The school is viewed as a battlefield for political gain. It is a place with distinct factions and its social relationship is filled with schemes, plots, calculations, fierce competition, and infighting. People try to deceive and outwit each other. Because the school members fight to protect their own interests, such as resources, funding, and materials, there are conflicts among them. They map out plots for personal gain and attempt to steal the stage. To protect their interests from being monopolized by a certain party, they emphasize the importance of negotiations, democratic decisions, and resource distribution to reestablish organizational goals. A principal noted,

Politics unifies colleagues, maintains balance, promotes school affairs, and improve efficacy. (H3U6)

A parent recounted,

The teachers work with other parties; the mutual confrontation builds a platform for safe communications and allows the diverse groups’ opportunities to exchange their thoughts and explore the best strategies for mutual supplementary growth and stimulation. (P1R4)

The employment of a political metaphor can also cover up hidden agendas behind the decision-making processes. People conceal their personal agendas, gang up together, and play dirty, insincere, under-the-table games. They ignore students’ rights and make distorted decisions as if they were in a different position with different thoughts. Their dishonesty destroys mutual trust, thus undermining their school’s development. An administrative staff argued,

The teachers are not sincere and only play their own games, which causes the collapse of mutual trust. People become mendacious. (A1U1)

A principal explained,

The competition among several parties is monopolized by factions; they compete viciously, defame others, fight tooth and nail, and exhaust all possible means to snatch away any benefits. (H1U4)

Community metaphor. School members are organized into teams to carry out different tasks. Each team has its own professional goals and is engaged in activities to complete specific tasks. They support and trust each other. They encourage professional learning through sharing and dialogue, contribute to the curriculum development both within and across domains, and thereby drive professional development. A teacher expounded,

We build a foundation of trust and are willing to prepare lessons, research and develop teaching materials, and explore teaching methods together, enhancing professional development and inspiring self-motivation. (T4R7)

Another teacher explained,

We have friendly relationships. When we face issues, feeling frustrated and low, the emotional bond between us helps us focus on exchange and sharing. The free exchange within the group helps ease feelings of loneliness we are a community of life. (T3U12)

However, the employment of a community metaphor also prompts individuals to consolidate their professional status. A community can easily become a group mainly focusing on benefits or resources, which subsequently creates frictions between communities and schools. When people focus on self-interests or when the community operations become too demanding, the interactions among communities or teachers can become intense. When they are dedicated to exploring innovative teaching methods, they may give up their original good teaching strategy due to peer pressure. A teacher commented,

Great consumption of time and energy occurred when we participated in community operations. Sometimes bad information circulated in the community. (T5R8)

A teacher stated,

People have their own professional practice, competition happens among clans. This is inefficient. As a result, I feel disappointed and become unwilling to invest any effort into students’ learning development. (T6R9)

Discussion

This research focused on the application of metaphors to school reform. Schools can use metaphors to face challenges such as the impact of a low birthrate, parents’ demands to improve students’ academic achievement and performance, and national education reforms emphasizing the development of characteristic courses and experimental programs. The application of metaphors can strengthen the literacy-oriented professional growth and reform context of teaching innovation.

Based on the literature discussion, this research selects 17 aforementioned metaphors conducive to school reform for quantitative research. Through quantitative analysis and personal enlightenment, the machine, organism, brain, political,
ing achievements. However, a bureaucratic system produces the disadvantages of indifference, a layered avoidance of responsibility structure, difficulty in innovation, and an excessive focus on form. It lacks a mechanism to respond to external changes, such as low birthrate, globalization, and education trends regarding competence learning. Some of the required external changes result from social environmental changes; some are caused by the needs of national economic development; and some are required for education reform. Therefore, a response mechanism solely based on bureaucracy will inevitably compromise school change. In particular, a combination of departmentalism in bureaucracy and paranoid autonomy can both create distorted decisions (Vermeule, 2017) and become oriented to the conceptual penis. This is because when the departments are under horizontal and vertical division of work, the staff may display behaviors associated with development, information concealment, and deception in their communication due to authoritative hierarchy and sectionalism, as a result of the patriarchy arising from masculine hegemony (Linstead & Mar’echal, 2015). Therefore, to respond to this changing environment, it is necessary for school principals to use the advantages of the organism metaphor such as dynamic balance, interrelationship, diverse goals, and mutual growth. The advantages of the community metaphor include professional development, sharing and exchanging information, emotional bonding, and community of life, setting multiple goals, establishing a learning community with diverse educational tasks and practices, and providing adequate support (Philpott & Oates, 2017). Only by using these advantages can principals strengthen the achievement of school goals, stimulate departmental leadership, strengthen the professional operations of the learning community, promote the professional growth of teachers, and ensure that professional learning can meet the needs of multipurpose practices (Carpenter, 2017; Fredholm, 2017). Furthermore, the above measures taken by principals can also promote teachers’ practical momentum for new tasks so as to achieve concrete results. This will alleviate parents’ anxieties in the face of changing situations (R. Smith, 2016), reduce the impact of the low birthrate on student enrollment, and mitigate the threats to school survival. In short, bureaucracy, due to both its success in diverse professional learning communities and its strengthened adaptability to the changing environment, can improve parents’ confidence and their acceptance of school management, meaning they will be willing to choose the school in question for their children.

School leaders should pay attention to how the use of community metaphors will produce the disadvantages of inefficient goal competition among clan structures; great consumption of time, energy, and technology; and the circulation of bad information, which must be excluded to strengthen school reform. Within the professional learning community, teachers often compete for benefits, which can distort community communication. For example, in the community of
interdisciplinary elective courses, the discipline of interest will become the focus of competition for benefits. In the learning community of international education, the dominance of English teachers is likely to make teachers in other disciplines feel that they have lower status. Senior teachers, due to vanity, may even aggressively dominate the direction and content of professional learning despite their outdated knowledge, which may delay or distort the professional growth of other teachers. Therefore, the principal should strengthen mutual confrontation, promote the maintenance of balance, encourage mutual supplementary growth, and insist on the mutual stimulation to use of political metaphors to encourage stakeholders, including principals, administrative staff, teachers, and parents, to participate actively in the distribution of benefits, as well as to reflect on the suitability of multiple goals while gathering public opinion (Fredholm, 2017). This both establishes mutually acceptable goals (McGann, 2018) and promotes the legitimacy of subject matter related to school change (Filippakou, 2017). These measures, in turn, will reduce distribution-induced tensions among stakeholders. By enhancing political legitimacy, the measures will encourage teachers to step out of their comfort zones, strengthen group dynamics, inspire teachers’ pursuit of innovative goals, and strengthen their professional growth in response to environmental changes.

Accordingly, school leaders can inspire the confluence of community metaphors and political metaphors (Silverman, 2012), use the advantages of community metaphors such as professional development, sharing and exchange, emotional bonds, and community of life to support teachers in overcoming challenges regarding their professional growth, and raise the awareness of stakeholders about the irreplaceability of intellectual capital. This will ensure that they can act with professionalism (Karabay, 2016), which, in turn, will ensure that their professional development is not distorted by disputes over the distribution of benefits. In the meantime, school leaders may use the advantages of political metaphors such as mutual confrontation, maintenance of balance, mutual supplementary growth, and mutual stimulation to encourage effective negotiations between stakeholders regarding the distribution of benefits, introducing intellectual capital to guide negotiation. Use emerging professions as the basis for arbitration will strengthen the political legitimacy of educational decision-making and establish the professional status of learning communities. This will help to train specialized professionals who meet the new needs of the organization while also assisting school leaders in selecting teachers with special professional expertise from the learning communities and placing them in appropriate positions within the bureaucracy. This will ensure that the bureaucracy has the ability to respond successfully to environmental changes (Scribner et al., 2002).

In the meantime, school leaders in the bureaucracy should strengthen the confluence of community metaphors and politics metaphors from a dialectical perspective while also rebuilding school organization theory, strengthening the advantages of the organism metaphor such as dynamic balance, interdependence, diversified innovation, mutual supplementary growth, adapting to environmental changes, and repositioning the roles of departments. On the contrary, when facing new disciplinary needs, the school’s organizational structure may lack the relevant functions. When the department fails to meet the needs of environmental change, a person from the department or the department itself will delay the smooth operation of the entire school, hinder school change, and inhibit school progress. In such cases, school leaders should draw on the advantages of brain metaphors such as situation-based response, close relationships, the extensive collection of ideas to strengthen the communication networks that stimulate mutual feedback in the bureaucracy, urge the development of relationships, and respond to the demand for change (Weick, 1995).

In particular, school leaders should use these brain metaphor advantages to select top professionals with outstanding performance records (Fantuzzo, 2015) and place them in leadership positions within the organizational structure. This will highlight the functional value of the division of labor in the bureaucracy, which, in turn, will motivate top professionals to lead other members of the department, thereby establishing a positive feedback cycle and promoting members to develop professional leadership in response to environmental changes. Accordingly, the school organization, as a community network, can provide a huge amount of support (Parisi et al., 2017) in terms of both stimulating a school’s momentum for systemic change and promoting the development of school organization (López-Rubio et al., 2017).

**Recommendations for Policy and Practice**

In terms of recommendations for educational policy, the government or school leaders can use the bureaucracy theory as the base and emphasize the division of labor and establishment of rules so that people can focus on their profession and have rules to follow to strengthen the organizational efficiency of the school, build a foundation for the organizational reform of the school, connect the metaphor with strong quantity and energy, and strengthen policy planning, policy formulation, and policy implementation.

In terms of education policy planning, leaders should use the machine metaphor, employ specialized personnel, promote the SOP, lead the education decision-making processes, use the organism metaphor to respond to environmental changes, use the brain metaphor and community metaphor to promote the Department’s human quality, and make good use of professionals of decisions.

In terms of the formulation of education policy, leaders should use the organism metaphor to invite parents and representatives of enterprises to express their opinions through holding public hearings and invite stakeholders to participate
in public hearings to stimulate their voices for self-interest and be aware of the problems of profit distribution through the politics metaphor, use self-control mechanisms of the brain metaphor to promote organizational learning to avoid excessive expansion and strengthen consultation, and avoid the resistance of stakeholders to reform.

In terms of education policy implementation, leaders should use the machine metaphor to establish SOPs to strengthen quality control. They should use the community metaphor to promote professional development by knowledge sharing and use the brain metaphor to build a huge organizational network to enlarge the support of policy implementation.

Conclusion and Implications

Facing the impact of low birthrate on schools, parents' requirements for higher education performance, and the context of national education reform emphasizing characteristic curriculum development, teacher professional development, and teaching innovation for school leaders, the use of bureaucracy as the cornerstone for school development strategies can strengthen the exploration of the complementary relationship between machine metaphors, organism metaphors, brain metaphors, political metaphors, and community metaphors while also helping to perceive and expand comprehensive resources for school change.

In the face of national education reforms and in response to the impact of the low birthrate, leaders motivate teachers to develop characteristic courses, strengthen the efficiency of curriculum development, set up curriculum promotion groups, and establish SOPs. This sequence includes the first draft of the course proposed by the subject domain, a preliminary review by the group, a review by the curriculum review committee, a second review by experts, and a final review by the curriculum development committee as a mechanism to ensure the quality of the curriculum and to highlight the characteristics of the curriculum. Therefore, the comprehensive resources are stable regulation and control of the SOP, legitimate goals for democratic participation in decision-making, adaptability to environmental changes, development of professional learning and dialogue, identification and promotion of top professionals, and significant levels of support from the school community network. These can develop the organizational theory, stimulate the instructional leadership, and promote the synergy of momentum for school change. All these benefits jointly extend school effectiveness, while also meeting the learning needs of all students.

Moreover, in the context of teacher professional development and teaching innovation, school leaders adopt the bureaucracy of the machine metaphor as the core mechanism constructed by the Grand Theory. It promotes both the efficient operations of professional communities and self-determination through the process of critical reflection. It also encourages the reasonable distribution of resources and professional development to create a confluence effect. In other words, people actively participate in profit sharing to enhance the legitimacy of professional development direction. The outcome of the professional learning community is used to persuade stakeholders to support profit sharing for specific professional development plans, which will bring public recognition and allow the majority of school members to have opportunities to further their professional growth. Organizational theory considers the individual, social, and professional elements of professional personality. The promotion of appropriate labor division, based on professions in SOPs, as well as the flexible adjustment of the standard operating procedures when facing a variety of environmental requirements, can improve brain function and organism vitality across affair offices. Through community strength, schools can enhance their adaptability and innovation, which, in turn, will expand student achievement and construct an orthodox theory of school organization.

However, the rich metaphors that accompany the management of school education are more complicated than school members imagine (Lynch & Fisher-Ari, 2018). Changes stimulated by bureaucracy and the ideology of middle class (Blanke, 1993) can easily entrenched school systems with educational inequality. Students with high socioeconomic backgrounds, racial superiority, and specific gender qualities have certain advantages, leaving others at a disadvantage. As a result, school organization theory replicates the strained circumstances from social stratification, excluding metaphors related to social, racial, and gender inequality. Frequently, schools face market competition and parents’ requirements for higher education performance. Leaders adopt merit theory to encourage teachers to catch up with the teaching progress, to save more time, and to increase students’ chances of repeated practice. This encourages competitive students to enter prestigious high schools, which will help win parental recognition and affirmation of the school. However, when teachers keep up with the teaching progress, it is easy for them to ignore students with disadvantaged cultural capital. When students fail to keep up with the classes’ progress, they will give up learning because of constant frustration, which will result in unequal in education. We must therefore question mainstream organizational theory and its concepts, raise self-awareness of ideology among leaders and teachers, and take action to improve equality among diverse groups. Metaphors can exhibit sincerity and create hope while also promoting the strange attractors of orthodox organizational theory. This will create positive butterfly effects that generate a change in momentum regarding the infinite possibilities and accumulated unpredictable forces that can influence progression. Encouraging bureaucracy to incorporate care into its innovation can reduce authority bias and encourage social justice (O’Brien, 2010). The Grand Theory of school organization should seek to reduce social, racial, and gender prejudice, as well as the discrimination that often arises because of these factors, providing intensive
services to minorities to help them fulfill their ambitions (Schoenborn et al., 2016). This will prevent the anti-education force of social class from being replicated in organizations and help the theory’s status become more mainstream (Anderson & Grinberg, 1998).

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD
Nai-Ying Whang https://orcid.org/0000-0003-0934-4902

Supplemental Material
Supplemental material for this article is available online.

References
Anderson, G. L., & Grinberg, J. (1998). Educational administration as a disciplinary practice: Appropriating Foucault’s view of power, discourse, and method. *Educational Administration Quarterly, 34*(3), 329–353.

Arnett, R. C. (1999). Metaphorical guidance: Administration as building and re-innovation. *Journal of Educational Administration, 37*(1), 80–89.

Arnold, W. N., & Crawford, E. R. (2014). Metaphors of leadership and spatialized practice. *International Journal of Leadership in Education, 17*(3), 257–285. https://doi.org/10.1080/13603124.2013.835449

Ball, S. J. (2006). Performativity and fabrication in the education economy: Towards the performativity society. In H. Lauder, P. Brown, J.-A., Dillabough, & A. H. Hasley (Eds.), *Education, globalization, and social change* (pp. 692–701). University of Oxford.

Bawa, P. W. (2017). The chameleon characteristics: A phenomenological study of instructional designer, faculty, and administrative perceptions of collaborative instructional design environments. *The Qualitative Report, 22*(9), 2334–2355. https://nsuworks.nova.edu/tqr/vol22/iss9/4

Bialostok, S. M. (2014). Metaphors that teachers live by: A cultural model of competence in the era of new literacies. *Language and Education, 28*(6), 501–520.

Blanke, V. (1993). *Organization theory: Doctor core*. The Ohio State University.

Brink, T. L. (1993). Metaphor as data in the study of organizations. *Journal of Management Inquiry, 2*(4), 366–371.

Bush, T. (2019). Distributed leadership and bureaucracy: Changing fashions in educational leadership. *Educational Management Administration & Leadership, 47*(1), 3–4. https://doi.org/10.1177/174143218806704

Carpenter, D. (2017). Collaborative inquiry and the shared workplace of professional learning community. *International Journal of Educational Management, 31*(7), 1069–1091.

Cert, Y. (2006). School metaphors: The views of students, teachers and administrators. *Educational Sciences: Theory & Practice, 6*(3), 692–699.

Christensen, S. T., & Wagoner, B. (2015). Towards a cultural psychology of metaphor: A holistic-development study of metaphor use an institutional context. *Culture & Psychology, 21*(4), 515–431.

Cornelissen, J. P. (2005). Beyond compare: Metaphor in organization theory. *Academy of Management Review, 30*(4), 751–764.

Cutright, A. (1999). A chaos theory metaphor for strategic planning. In M. Cutright (Ed.), *Chaos theory & higher education: Leadership, planning, & policy. Higher education: Questions about the purpose(s) of colleges & universities* (Vol. 9, pp. 1–166). Peter Lang.

Dagbovie-Mullins, S. A. (2011). From living to eating to writing to live: Metaphors of consumption and production in Sapphir’s push. *Africa American Review, 44*(3), 435–452.

Diem, S., Sampson, C., & Browning, L. G. (2018). Re-organizing a countryside school District: A critical analysis of politics and policy development toward decentralization. *Education Policy Analysis Archives, 26*(1), 1–27. https://doi.org/10.14507/eppa.26.3253

Doving, E. (1996). In the image of man: Organizational action, competence, and learning. In D. Grant & C. Oswick (Eds.), *Metaphor and organizations* (pp. 185–199). Sage.

Duru, S. (2015). A metaphor analysis of elementary student teachers’ conceptions of teachers in student- and teacher-centered contexts. *Eurasian Journal of Educational Research, 15*(60), 281–300.

Earle, J., & Kruse, S. D. (1999). *Organizational competence for educators*. Lawrence Erlbaum.

Fantuzzo, J. (2015). A course between bureaucracy and charisma: A pedagogical reading of Max Weber’s social theory. *Journal of Philosophy of Education, 49*(1), 45–64.

Fernandez, S., & Moldogaziev, T. (2015). Employee empowerment and job satisfaction in the U.S. Federal bureaucracy: A self-determination theory perspective. *American Review of Public Administration, 45*(4), 375–401.

Filippakou, O. (2017). The evolution and the quality agenda in higher education: The politics of legitimation. *Journal of Educational Administration and History, 49*(1), 37–52.

Fischer, D. (2011). Educational organisations as ‘cultures of consumption’: Cultural contexts of consumer learning in schools. *European Educational Research Journal, 10*(4), 595–610.

Fredholm, A. (2017). Reconsidering school politics: Educational controversies in Sweden. *The Curriculum Journal, 28*(1), 5–21. http://doi:10.1080/09585176.2016.1191361

Fullan, M. (2016). *The new meaning of educational change* (5th ed.). Teachers College Press.

Graham, J. D. (2013). The factory as a metaphor. *International Journal of Dermatology, 52*(2), 246–247. https://doi.org/10.1111/IJD.12010

Grissom, J. A., Kern, E. C., & Rodriguez, L. A. (2015). The “representative bureaucracy” in education: Educator workforce diversity, policy outputs, and outcomes for disadvantaged students. *Educational Researcher, 44*(3), 185–192.

Guo, S. Y. (2012). *Psychological and educational research methods: Quantitative, qualitative and mixed research methods*. Jing Hua.
Hall, D., & McHenry-Sober, E. (2017). Politics first: Examining the practice of the multi-district superintendent. Education Policy Analysis Archives, 25(82), 1–28. https://doi.org/10.14507/epaa.25.2934

Handy, C. (1995). The age of paradox. Harvard Business School Press.

Hernández-Amorós, M. J., & Ruiz, M. A. M. (2018). Principals’ metaphors as a lens to understand how they perceive leadership. Educational Management Administration & Leadership, 46(4), 602–623. https://doi.org/10.1177/1741432116688470

Inbar, D. E. (1996). The free educational prison: Metaphors and images. Educational Research, 38(1), 77–92.

Jenkins, J. J. (2012). Community as metaphor: Dialectical tensions of a racially diverse organization [Doctoral dissertation]. https://scholarcommons.usf.edu/etd/4341/

Karabay, A. (2016). An investigation of prospective teachers’ views regarding teacher identity via metaphors. Eurasian Journal of Educational Research, 65, 1–18.

Kendall, J. E., & Kendall, K. E. (1993). Metaphors and methodologies: Living beyond the systems machine. Management Information System Quarterly, 17(2), 149–171.

Kets De Vries, M. F. R., & Miller, D. (1984). The neurotic organization: Diagnosing and changing counterproductive styles of management. Jossey-Bass.

Lackney, J. A. (2005). New approaches to school design. In F. Engkish (Ed.), The Sage handbook of educational leadership (pp. 506–537). Sage.

Lakoff, G., & Johnson, M. (1980). Metaphors we live by. University of Chicago Press.

Linstead, S. A., & Mar’echal, G. (2015). Re-reading masculine organization: Phallic, Testicular and seminal metaphors. Human Relations, 68(9), 1461–1489. https://doi.org/10.1177/0018726714558146

López-Rubio, E., Kuque-Baene, R. M., Palomo, E. J., & Domínguez, E. (2017). Dynamic tree typology learning of self-organization. Neural Computing & Applications, 28(5), 911–924.

Lynch, H. L., & Fisher-Ari, T. R. (2018). What we learned about using metaphors in College teaching: Methods and meanings. College Teaching, 66(2), 60–62. https://doi.org/10.1080/8756555.2017.129501

MacKechnie, G., & Donnelly-Cox, G. (1996). Metaphor in the development of organization theory. In D. Grant & C. Oswick (Eds.), Metaphor and organizations (pp. 37–52). Sage.

Marshak, R. (1996). Metaphors, metaphorical, and organizational. In D. Grant & C. Oswick (Eds.), Metaphor and organizations (pp. 147–165). Sage.

McGann, B. (2018). The power of a generative ecosystem: Insight from leaders. Policy & Practice, 76(1), Article 22.

Miller, S. I., & Fredericks, M. (1988). Uses of metaphor: A qualitative case study. International Journal of Qualitative Studies in Education, 1(3), 263–272.

Morgan, G. (1986). Images of organization. Sage.

Morgan, G. (1993). Imaginizing: New mindset for seeing, organizing, and managing. Berrett-Koehler.

Morgan, G. (1997). Images of organization. Sage.

Morgan, G. (2006). Images of organization. Sage.

Morgan, G., & Zohar, A. (1998). The 15% approach: Quantum change in incrementally!. Holland Management Review, 53, 24–25.

O’Brien, G. V. (2010). Social justice implications of the organism metaphor. The Journal of Sociology & Social Welfare, 37(1), 95–113.

Örtenblad, A., Putnam, L. L., & Trehan, K. (2016). Beyond Morgan’s eight metaphors: Adding to and developing organization theory. Human Relations, 69(4), 875–889.

Oswick, C., & Grant, D. (2015). Re-imagining images of organization a conversation with Gareth Morgan. Journal of Management Inquiry, 23(3), 338–343. https://doi.org/10.1177/1056492615591854

Parisi, G. I., Tani, J., Weber, C., & Wermter, S. (2017). Life learning of human actions with deep neural network self-organization. Neural Networks, 96, 137–149.

Pauchant, T. C. (1995). Introduction: Toward a field of organizational existentialism. In T. C. Pauchant and Associates (Eds.), In search of meaning: Managing for the health of our organizations, our communities, and the natural world (pp. 1–25). Jossey-Bass.

Philpott, C., & Oates, C. (2017). Professional learning communities as drivers of educational change: The case of learning rounds. Journal of Educational Change, 18(2), 209–234.

Raymond, E. D. (1993). The analytical laboratory as factory: A metaphor for our times. Analytical Chemistry, 65(18), 802–809.

Remenyi, D., Grant, K. A., & Pather, S. (2005). The chameleon: A metaphor for chief information officer. Journal of General Management, 30(3), 1–11.

Robinson, M. D., & Tamir, M. (2005). Neouticism as mental noise: A relation between Neouticism and reaction time standard deviations. Journal of Personality and Social Psychology, 89(1), 107–114.

Rowan, B. (2002). Rationality and reality in organizational management: Using the coupling metaphor to understand educational (and other)—a concluding comment. Journal of Educational Administration, 40(6), 604–611.

Ryman, J. A., Porter, T. W., & Galbrith, C. (2009). Disciplined imagination: Art and metaphor in the business school classroom. International Journal of Education & The Arts, 10(8–10), 1–26.

Schoenborn, D., Vásquez, C., & Cornelissen, J. (2016). Imagining organization through metaphor and metonymy: Unpacking the process-entity paradox. Human Relation, 69(4), 915–944.

Schon, D. A. (1979). Generative metaphor: A perspective on problem-setting in social policy. In A. Ortony (Ed.), Metaphor and thought (pp. 254–283). Cambridge University Press.

Scribner, J. P., Cockrell, K. S., Cockrell, D. H., & Valentine, J. W. (1999). Creating professional communities in schools through organizational learning: An evaluation of a school improvement process. Educational Administration Quarterly, 35(1), 130–160.

Scribner, J. P., Hager, D. R., & Warne, T. R. (2002). The paradox of professional community: Tales from two high schools. Educational Administration Quarterly, 38(1), 45–76.

Sergiovanni, T. J. (1994). Organizations or communities? Changing the metaphor changes the theory. Educational Administration Quarterly, 30(2), 214–226.

Short, D. C. (2001). Strategies for applying metaphor in HRD research, practice, and education. Advances in Developing Human Resources, 3(3), 379–396.

Silverman, M. (2012). Virtue ethics, care ethics, and “The good life of teaching.” Action, Criticism, and Theory for Music Education, 11(2), 96–122.
Smith, K. (1992). Philosophical problems in thinking organizational change. In R. Quinn & K. Cameron (Eds.), *Paradox and transformation: Toward a theory of change and management* (pp. 10–63). Jossey-Bass.

Smith, R. (2016). Bureaucracy as innovation. *Research Technology Management, 15*(1), 61–63.

Tait-McCutcheon, S., & Drake, M. (2016). If the jacket fits: A metaphor for teacher professional learning and development. *Teaching and Teacher Education, 55*, 1–12.

Tsoukas, H. (1991). The missing link: A transformational view of metaphors in organizational science. *Academy of Management Review, 16*(3), 566–585.

Tyack, D. B. (1974). *The one best system: A history of American urban education*. Harvard University Press.

Urick, A., Wilson, A. S. P., Ford, T. G., Frick, W. C., & Wrsonowski, M. L. (2018). Testing a framework of math progress indicator for ESSA: How opportunity to learn of instructional leadership matter. *Educational Administration Quarterly, 54*(3), 396–438. https://doi.org/10.1177/0013161X18761343

Vanblaere, B., & Devos, G. (2018). The role of departmental leadership for professional learning communities. *Educational Administration Quarterly, 54*(1), 85–114. https://doi.org/10.1177/0013161X17718023

Van den Hoven, M., & Litz, D. R. (2016). Organizational metaphors and the evaluation of higher education programs, management practice and changing processes: A UAE case study. In O. C. Espinosa (Ed.), *Handbook of research on systemic knowledge-based assessment of higher education programs* (pp. 43–68). IGI Global.

Van Veelen, R., Sleegers, P. J. C., & Endedijk, M. D. (2017). Professional learning among school leaders in secondary education: The impact of professional and work context factors. *Educational Administration Quarterly, 53*(3), 365–408. https://doi.org/10.1177/0013161X16689126

Vermeule, A. (2017). Bureaucracy and distrust: Landis, Jaffe, and Kagan on the administrative state. *Harvard Law Review, 130*(9), 2643–2463.

Walker, J. L. (2018). Do methods matter in global leadership development? Testing the global leadership development ecosystem conceptual model. *Journal of Management Education, 42*(2), 239–264. https://doi.org/10.1177/1052562917734891

Weick, K. E. (1995). *Sense-making in organizations*. Sage.

Weiner, J. M., & Burton, L. J. (2016). The double bind for women: Exploring the gendered nature of turnaround leadership in a principal preparation program. *Harvard Educational Review, 86*(3), 339–365.

White, S. R. (2002). Organization model of a constructivist learning community: A Teilhardian metaphor for educators. *Journal of Educational Thought, 36*(2), 111–128.

Wolf, G. (2002). Inner space as scared space: The temple as metaphor for the mythical experience. *Cross Current, 52*(3), 400–411.