Investigating the Major Effect of Principal's Change Leadership on School Teachers' Professional Development

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Abstract

In a rapidly changing era, educational change has become one of the crucial tasks for better student performance in schools. Potential and innovative leadership in schools is needed to keep up with the fast-pace of change, and to achieve better learning results for students. Therefore, how to construct a teacher's professional development to fulfil the outcome-based policy in schools is a new challenge for principals. This study focused on principals' change leadership as perceived by school teachers and explored which dimension of change might impact on the teachers' professional development. This study successfully invited 490 teachers from 41 elementary schools in New Taipei City (Taiwan) to participate in this study. There were 453 valid questionnaires returned which represented a 92.4% return rate. Twenty-five indicators of change in leadership were classified into three dimensions, namely: "communicating and shaping change action", "building a supported environment", and "adjusting organization and performance". The teachers' professional development has been defined by eight indicators which classified into "willing" and "effect" of participation. This study employed the stepwise method to determine the major factors that impact a teachers' professional development by using regression models. The results reveal both "building a supported environment" and "adjusting organization and performance" in a principal's change in leadership can explain 23.2% of the teachers' professional development. Based on the results of regression analysis, this study suggests that properly shaping a principal's change leadership can prompt to enhancing a teachers' professional development. Furthermore, change leadership might be applied to wider practices to improve a teachers' performance in various settings.

Keywords: change leadership; elementary schools; principal; professional development; school teachers.

Introduction

Various leadership styles have been thoroughly discussed. For example, contingency leadership (Gelei, Losonci & Matyusz, 2015; Shao, Feng & Hu, 2016), distributed leadership (Cannatelli, Smith, Giudici, Jones & Conger, 2016), transitional leadership (Oplatka & Arar, 2016; Shao, Feng & Hu, 2016), transformational leadership (Chong, 2015; Shao, Feng & Hu, 2016), servant leadership (Liden, Panaccio, Meuser, Hu & Wayne, 2014a; 2014b; O'Reilly, Doerr, Caldwell & Chatman, 2014; Panaccio, Henderson, Liden, Wayne & Cao, 2015), and others. While facing rapid changes in technology and society, change-oriented leadership has caused concern in different organizational settings (Gill, 2002). The "change is manageable" bubble began to burst in the mid-1980s, and by the 1990s it became obvious that managing change was becoming less and less possible (Anderson & Ackerman Anderson, 2001). Most challenges come from the technological revolution, primarily fuelled by information and communication technologies, which increased the speed and scope of change so much that the process of change became significantly more complex.

This study assumes that while change might be manageable, it also requires effective leadership to be successfully implemented and sustained. This is especially the case for traditional and conservative organizations, for instance, as well as different levels of schools that need to introduce a model of leadership for change to reflect their requirements. The question of this research focuses on how we know if change-oriented leadership works in a specific setting. If it works in schools, what kinds of dimensions are consisted of such kind of leadership model? Obviously, it is not appropriate to ask the related questions from school principals directly, while the teachers' perceptions of principal change leadership will reflect the real practices. Specifically, first, this study tries to realize the principals' change leadership perceived by school teachers, then to determine which dimensions of change leadership might impact on teachers' professional development. Finally, based on the findings, this study provides suggestions about how to enhance leadership training programs.

Literature Review

As Fullan argues, the more complex society gets, the more sophisticated leadership must become. He mentions the theoretical reasons and tactical skills for change, including moral purpose, understanding change, developing relationships, knowledge building, and coherence making (Fullan, 2001). Leaders must develop the skills they need to lead effectively, no matter how fast the world around them is changing. In this section, this study reviewed related literature to support the main themes of our study: change leadership and teacher' professional development.

Change Leadership in Organizations

Previous researchers assumed leaders would indeed provide leadership and make decisions, and assumed they would make those decisions in the best interests of the organization. In an organization, most people are employees – that being in management or non-management roles – and at any one moment in time they may initiate one change, support a second, and resist a third. Leaders and managers are change agents, and non-management employees usually resist change. Hence, the non-management employees must be managed by managers who themselves might never resist change (Anderson & Anderson, 2001; Anderson & Ackerman-Anderson, 2001). As a result, leadership is all about action and influence, and not only the titles. Many leaders do not provide leadership, and many who do perform leadership do not perceive themselves as leaders.

Change can range from relatively simple short-term alterations to highly complex long-term transformations, and is likely to involve many kinds of leadership and management behaviours on the part of many different individuals and groups. Anderson and Ackerman-Anderson (2001) argue there are two types of transformation for change leadership in organizations. One is the transformation happens in the organization in terms of the state of awareness that leaders personally bring to change, which influences the actions they take. The leaders 'take' to transformation impacts every aspect of their change leadership capability and experience, including their personal ability to change, the change strategies they develop, their leadership and decision-making styles, their communication patterns, their relationships with stakeholders, their personal reactions, and, ultimately, their outcomes. Therefore, expanded awareness is like getting the benefit of both a wide-angle lens and a high-powered telephoto lens at the same time. Through the wider view, leaders can see more broadly the dynamics at play in transformation (Anderson & Ackerman-Anderson, 2001). Figure 1 addresses the level of the wake-up call for such type of transformation.

The change exerted by leadership may emerge in line with the model in Figure 2. The model can be used to explain the interaction between leaders and followers or members in the organization. The leaders prepare the wake-up call for change, while the followers will prepare to lead and implement the change.

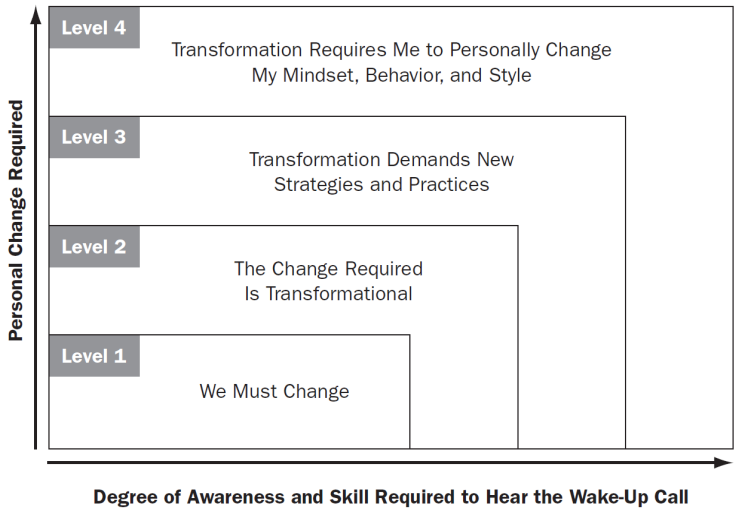

Figure 1: Level of walk-up call for transformation
Source: Anderson & Ackerman-Anderson, 2001, p. 41.

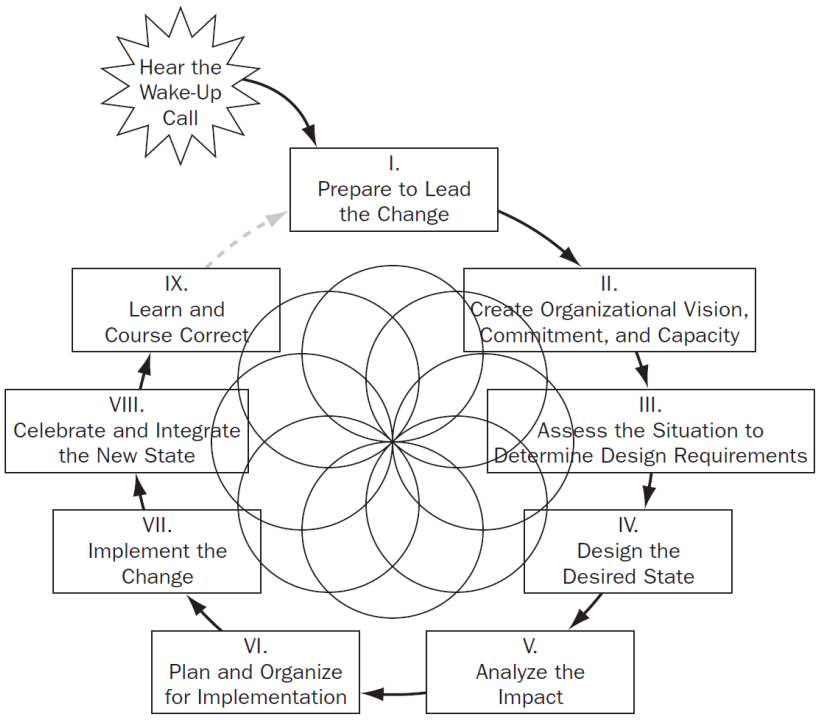

Figure 2: Change process for leading conscious transformation
Source: Anderson & Ackerman-Anderson, 2001, p. 171.

The majority of change leadership studies focus on the individual leader as the source of change outcomes (Ford & Ford, 2012). Following the arguments of Hughes and Ford (2016), this study assumes that leadership is a personal possession of the leader rather than partners in the co-creation of change outcomes.

The Effect of Principal's Change Leadership on Teachers

Kin et al. (2017) claim that a principal's change leadership competencies are significantly related to teacher change beliefs as demonstrated by their SEM model. Their study implies that if school principals equipped themselves with sufficient change leadership competencies, teacher change beliefs can be enhanced. Teacher change beliefs were also significantly related to teacher attitudes towards change, whereby the stronger the teacher change beliefs, the greater the enhancement of teacher attitudes toward change. Therefore, enhancing teacher change beliefs is one of the effective ways to increase the likelihood of teachers to embrace change. Principal's change leadership is an influential factor in enhancing teacher attitudes toward change (Kin, Kareem, Nordin & Khuan, 2017). This study assumes that how teachers perceive principal's change leadership might enhance teacher attitudes toward change. In recent reform initiatives, building and lifting teachers' professional development has become one of the important tasks in schools (National Academy for Educational Research, 2016). Based on the effect of principal's change leadership on teacher's professional development, the result of this study will provide useful information for school leaders.

Fullan argues that there are strong reasons to believe that the five components of leadership represent independent but mutual reinforcing forces for positive change. There are attending to a broader moral purpose, keeping on top of the change process, cultivating relationships, sharing knowledge, and setting a vision and context for creating coherence in organizations.

Then, leaders will be empowered to deal with complex change (Fullan, 2001). Leadership, then, is not mobilizing others to solve problems that they already know how to solve, but rather to help them confront problems that have never been successfully addressed. Basically, schools are beginning to discover that new ideas, knowledge creation, and sharing are essential to solving learning problems in a rapidly changing society. When the principals face change, the leadership they exert might contain the following five domains (Fullan, 2001; Hall &, Hord, 1987):

- Creating a sense of crisis;
- Communicating and shaping version;
- Adjusting and reinforcing organizational structure;
- Building a supportive environment;
- Deeping change culture.
- Previous studies have reported the related effect of principal's change leadership, while the effect of specific dimensions on teachers' professional development is still unclear.

Teachers' Professional Development

The professional development of teachers to enhance teacher's knowledge and skills has become a top priority in schools. In Taiwan, the curriculum reform initiated by the Ministry of Education has been implemented. The significant change is that the paradigm of new curriculum and teaching has shifted from a knowledge-oriented curriculum to one that stresses more activities and practices to bring about knowledge acquisition (National Academy for Educational Research, 2016). However, like other countries, a considerable proportion of school teachers may have been trained in more traditional ways (Chu, Reynolds, Tavares, Notari & Lee**,** 2017). Moreover, just as every student learns differently, teachers also have many different learning styles and face a variety of circumstances in the classroom. Most professional development today is ineffective because it neither changes teaching practices nor improves student learning. For example, professional development training events are sometimes inappropriate in size and scope, and without the structure to support learning new ideas or skills. They may also lack support for teachers' implementation of new instructional practices. The situation in schools is similar to that of the CPE's report – a professional development initiative that neither recognizes how "teaching is inherently complex and nuanced" nor promotes the empowerment of teachers via professional learning communities (Gulamhussein, 2013). With the aim to provide stronger educational support to in-service teachers in their adoption and development of new skills in teaching, the principal has been expected to initiate school-based professional development more effectively.

Continual professional development may give teachers time to learn and implement new teaching strategies. Therefore, providing ongoing instruction for a significant duration of time is necessary. Providing support addresses the challenges associated with changing a classroom practice. Previous studies have suggested active learning opportunities for school teachers. The activities can include readings, role-play, open-ended discussions, live modelling, and classroom visits. Many forms of active learning help teachers decipher concepts, theories, and research-based practices in teaching, and modelling the new practice (Zarrow**,** 2014). With a rapidly changing era, educational change has become one of the crucial components for better performance in schools. Innovative leadership in schools has been expected to fit the fast-paced of change to achieve better learning results for students. Therefore, how to build teachers' professional development to fulfil the outcome-based

policy in schools has grown into a new challenge for principals. The linkage between leadership and professional development has become an important component in schools.

Based on the discussions in previous studies, this study assumes the leadership for professional development in schools exerted by principals might impact on the change of teachers. This study selected New Taipei City as the target group to collect data in 2016. The reason for this selection is that New Taipei has become the largest city with the largest school system in Taiwan. This study selected the quantitative approach to explore the topic. SPSS has been used to conduct the statistical analysis. In this section, the research framework, sampling, and verified the research tool will be addressed.

Research Framework

This study attempts to realize the relationship between the principal's change leadership and teachers' professional development. To start, the principal's change leadership and teachers' professional development will be assessed by using gender, teaching experiences, and school scale to determine their differences. Then, this study employs the stepwise method to determine the major factors impacting on teachers' professional development in regression models. The principal's change leadership may include various dimensions which will be verified by factor analysis. The teachers' professional development has been defined by willing to participating the related enhancing activities and the effect of the professional development. The testing model has been presented in Figure 3.

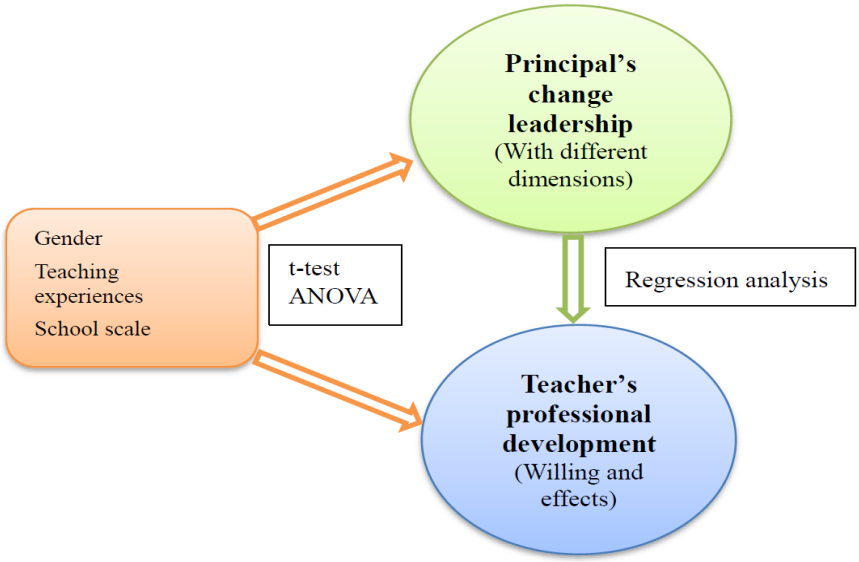

Figure 3: Research framework

Sampling

Based on the criteria for survey, a population over 5,000, the proportion of samples could be 20 percent of the target group (Gay, 1992). More precisely, this study estimated the samples from target group in terms of 16,201 elementary school teachers in New Taipei City with 95% confident level and possible error control under .05. In this case, the satisfied samples for study are 400. According to the sampling formula proposed by Dillman (2000), the fittest estimated samples are as follows:

$$n = \frac{N}{N\left(\frac{2d}{z_{\alpha/2}}\right)^2 + 1} = \frac{16201}{16201 \times \left(\frac{2 \times 0.05}{1.96}\right)^2 + 1} \approx 375$$

N: 16201 elementary school teachers; *n*: fittest samples; *d*: error of tolerance

This study also considers the school scale, and so the samples were classified by following the rules: under 12 classes (14 schools), 12-30 classes (7 schools), 31-60 classes (10 schools), and over 61 classes (10 schools). With 80 percent return rate, we expected to distribute 490 copies of questionnaires for teachers. The detail distribution of 490 samples has been presented in Table 1.

Table 1: Elementary scale and sampling distribution in New Taipei City.

School scale (classes)	Under 12	13~30	31~60	Over 61	Total
Number of schools (%)	68 (33%)	36 (17%)	51 (25%)	50 (25%)	205 (100%)
Target schools (25%)	14	7	10	10	41
Number of teachers (%)	1,246 (8%)	1,910 (12%)	4,984 (30%)	8,061 (50%)	16,201 (100%)
Samples	70	70	150	200	490
Average samples of schools	5	10	15	20	

Source: Bureau of Education, New Taipei City. (2016). Educational statistical data in New Taipei City in 2015. Retrieved from http://www.ntpc.edu.tw/_file/2052/SG/25532/D.html

This study successfully invited 490 teachers from 41 elementary schools in New Taipei City (Taiwan) to participate in this study. It resulted in 453 valid questionnaires, a 92.4% return rate made up of 165 (36.4%) male and 288 (63.6%) female teachers.

Research Tools

Both self-developed change leadership and professional development questionnaires have been verified by factor analysis. Twenty-five indicators of change leadership have been classified into three dimensions, named “communicating and shaping change action” (11 items), “building supported environment” (9 items), and “adjusting organization and performance” (5 items). The Cronbach’s α is counted .917 in the designed questionnaires. It represented the items that have good reliability in term of satisfied internal consistence. Factor analysis with Varimax extraction reveals there are three factors in the change leadership and totally can explained 76.29% variance, see Table 2. The rotation of three factors has been presented in Table 3. The teachers’ professional development has been defined by the willing and effect of participating which includes eight indicators.

Table 2: Factor analysis for developing valid principal's change leadership questionnaire (Extraction: Varimax).

Factor	Initial Eigen values			Extracted sum of square			Circulate sum of square		
	Total	variance %	cum %	Total	variance %	Cum %	Total	variance %	Cum %
1	18.063	72.251	72.251	17.818	71.274	71.274	7.799	31.196	31.196
2	.920	3.678	75.930	.657	2.628	73.901	6.225	24.899	56.095
3	.798	3.192	79.122	.597	2.386	76.288	5.048	20.193	76.288
4	.593	2.374	81.495						
5	.482	1.928	83.423						
6	.448	1.793	85.216						
7	.347	1.387	86.603						
8	.300	1.202	87.805						
9	.289	1.155	88.960						
10	.260	1.040	90.000						
11	.252	1.010	91.009						
12	.241	.962	91.972						
13	.216	.866	92.837						
14	.206	.823	93.660						
15	.198	.793	94.453						
16	.191	.765	95.218						
17	.179	.718	95.936						
18	.161	.643	96.579						
19	.143	.573	97.152						
20	.136	.543	97.695						
21	.132	.526	98.221						
22	.127	.508	98.729						
23	.121	.485	99.214						
24	.108	.431	99.64						

			5						
25	.089	.355	100.0 0						

Table 3: The rotation of the factor matrix.

Items	Factors		
	1	2	3
A7	.762		
A6	.747		
A2	.709		
A3	.705		
A8	.681		
A4	.672		
A5	.664		
A9	.650		
A10	.647		
A1	.647		
A23	.575		
A20		.733	
A19		.683	
A18		.669	
A24		.633	
A16		.605	
A17		.604	
A22		.584	
A25		.570	
A21		.554	
A12			.777
A13			.723
A14			.653
A11			.622
A15			.595

Note. Extraction: Varimax; Rotation: Kaiser's Varimax

Results

The results demonstrate the group differences in principal's change leadership and teachers' professional development. The main effect of principal's change leadership impacted on the teachers' professional development will be addressed. This study considered the teachers' perception may have gender, teaching experiences, and school scale differences. The teaching experiences have been classified into four groups by 5, 10, 15, and over 15 years. School scales have been defined by four groups: Under 12 classes, 13-30 classes, 31-60 classes, and over 61 classes to verify their differences.

Principal's Change Leadership

According to factor analysis, twenty-five indicators of change leadership can be classified into three dimensions. Principal's change leadership has shown gender differences (t=2.065, p=.039), male teachers perceived higher change leadership from their principals than female teachers. This phenomenon also shows in "building supported environment" (t=2.001, p=.046) and "adjusting organization and performance" (t=2.073, p=.039), while there is no significant difference in "communicating and shaping change action" (t=1.920, p=.055), see Table 4.

Table 4: The principal's change leadership perceived by teachers with different gender.

Gender difference		*N*	*t*	*df*	*p* (two tails)
Principal's change leadership	Male Female	165 288	2.065	451	.039
communicating and shaping change action	Male Female	165 288	1.920	451	.055
building supported environment	Male Female	165 288	2.001	451	.046
adjusting organization and performance	Male Female	165 288	2.073	451	.039

One way ANOVA demonstrated that the various groups of teachers' teaching experiences have shown different perceptions on principal's change leadership ($F_{(3,449)}$=3.342, p=.019). The differences show in "communicating and shaping change action" ($F_{(3,449)}$=4.121, p=.007) and "building supported environment" ($F_{(3,449)}$=3.039, p=.029). But there is no significant difference in "adjusting organization and performance" ($F_{(3,449)}$=1.635, p=.176), see Table 5. Specifically, the differences come from under 5 years group and 5 years group (p=.034), and also displays the differences in 5 years group and over 15 years group (p=.023). In this case, the teaching experience differences did not consist in their explanation of principal's change leadership. Moreover, this study reveals there is no significant difference of principal's change leadership comparing the various school scales.

Teachers' Professional Development

Teachers' professional development has been classified two dimensions: willing to participating related activities and effect of professional development. Table 6 demonstrates the results of teachers' willing to participate and the effect of participating in related activities. The results of teacher's willingness to participate in the learning group or learning community are highly based on their means.

Table 5: Principal's change leadership perceived by teachers with different teaching experiences.

Different teaching experiences		Sum of square	*df*	Mean square	*F*	*p*
Principal change	Between	4382.768	3	1460.923	3.342	.019

leadership	group					
	Within group	196263.263	449	437.112		
	Total	200646.031	452			
Communicating and shaping change action	Between group	955.495	3	318.498	4.121	.007
	Within group	34698.558	449	77.280		
	Total	35654.053	452			
Building supported environment	Between group	631.083	3	210.361	3.039	.029
	Within group	31082.789	449	69.227		
	Total	31713.872	452			
Adjusting organization and performance	Between group	107.684	3	35.895	1.653	.176
	Within group	9749.539	449	21.714		
	Total	9857.223	452			

Table 6: Teacher's professional development reported by teachers.

Indicators	Mean	*SD*	Rank
Willing to participate			
1. Willing to engage in group or learning community to promote teaching skills	4.01	0.85	7
2. Willing to participate class observation activities for improving teaching	3.79	0.96	8
3. Willing to participate workshop activities in or off campus	4.11	0.81	5
4. Willing to keep study and innovation in teaching	4.05	0.75	6
Effect of participating			
5. I can consider student's needs and design teaching	4.18	0.62	2
6. I can promote student learning and enhancing their capability	4.22	0.64	1
7. I can face the students with low motivation and active them	4.13	0.73	4
8. I have satisfied discipline knowledge and still pursuit to learn something new	4.15	0.69	3

Gender did not display significant differences in their will to participate (t=-.217, p=.828) and effect of participate the related learning activities (t=.552, p=.581). There is no significant difference in willing to participate with the teacher's teaching experiences ($F_{(3,453)}$=1.745, p=.157). The effect of participant related teaching activities has also shown no significant differences with the teachers' teaching experiences ($F_{(3,453)}$=2.221, p=.085). While this study demonstrates that teachers in small schools with 12 classes or less are more willing to participate in the related professional development activities (F(3,453)=3.563, p=.014). There is no significant difference in the effect of participating professional development activities ($F_{(3,453)}$=.694, p=.556).

Table 7: Teacher's professional development differences with school scale.

	School scale	*N*	*M*	*SD*	*F*	*p*	Turkey
Willing to participate	①12 classes or less	62	4.14	0.59	3.563*	.014	①>③
	②13-30 classes	58	4.02	0.63			
	③31-60 classes	147	3.84	0.68			
	④61 classes or over	186	3.88	0.68			
Effect of	①12 classes or	62	4.28	0.50	.694	.556	

participate learning activities	less						
	②13-30 classes	58	4.17	0.53			
	③31-60 classes	147	4.19	0.57			
	④61 classes or over	186	4.17	0.55			

The Effect of Principal's Change Leadership

Based on the regression analysis, the teachers' professional development can be explained by principal's change leadership 23.3% of the variance (R^2=.232, $F_{(1,451)}$=135.973, p=.000). This study also considered the two dimensions of teacher profession development: one is willing to participate in related activities, the other is the effect of participating in professional development activities in regression models. First, the result reveals that the teachers' willing can be explained by principal's change leadership only in the "building supported environment" dimension. The regression model shows the R^2 =.217, it means only 21.7% variance can be explained in this model ($F_{(1,451)}$=124.628, p=.000). Second, this study found the effect of teachers' professional development can be explained by principal's change leadership only 18.1% with "building supported environment" and "adjusting organization and performance" ($F_{(2,450)}$=49.605, p=.000). Table 8 presents the details of the two regression models.

Table 8: The effect of principal's change leadership on teachers' professional development explained by regression models.

Models (Dep/In dep. var.)		***B***	***SE***	**Beta**	***T***	***p***	**Tolerance**	**VIF**
1. Willing	(constant)	2.507	.136		18.433	.000		
	CL2	.038	.003	.465	11.164	.000	1.000	1.000
2. Effect	(constant)	3.100	.114		27.271	.000		
	CL2	.016	.006	.239	2.757	.006	.243	4.112
	CL3	.024	.010	.201	2.321	.021	.243	4.112

Note. CL2= building supported environment; CL3= adjusting organization and performance

Conclusion

Over a period of time, the government has initiated school-based reform to promote innovative teaching in order to better student performance. Principals have been expected to exert more influence in leadership for changing the school culture. Focusing on the principal's change leadership and teachers' professional development, this study designed the survey tools to verify the assumption that the principal's change leadership can make differences in schools. In this study, the results reveal the five domains of principal's change leadership did not verify. According to the factor analysis, the idea of a principal's change leadership can be explained by "communicating and shaping change action", "building a supported environment", and "adjusting organization and performance". The effect of a

principal's change leadership has shown significantly related to the teachers' professional development in terms of "willing to participate related activities" and "effect of professional development".

Based on the survey, the elementary schools in New Taipei City have shown satisfactory change leadership and high engagement in professional development. This study demonstrates a positive relationship between the principal's change leadership and teacher's professional development. The results reveal that when the perceived principal's change leadership existed in schools, it can reinforce teachers' professional development in terms of their willingness to participate in teaching-related enhancing activities and the expected effect of participation. Even though the study focuses on only elementary school settings, the findings can endorse the knowledge of the specific field.

For further studies, this study suggests focusing on how to enhance the capability of principal's leadership in the changing era. Principal's change leadership competencies are more influential than teachers' self-influence in enhancing teacher attitudes toward change. Therefore, concerted effort may be given to prioritize the continuous development of principal's change leadership in effective change management. The pre-service training program for principals needs to focus on the topic of change leadership. In addition, more complicated research design may provide details of information to interpret the theoretical framework, for example a workable SEM model.

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