Scientific Research

The Effects of the Leadership Style on the Learning Motivation of Students in Elementary Schools

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ABSTRACT

This major objective of this study is to investigate the effect of leadership styles of science teachers on the learning motivation of elementary school students. It is generally known that students' learning motivation could affect the learning achievement. Besides, students with strong learning motivation generally lead to better learning performance. If a teacher can break through the tradition and adopt a creative leadership style, it is possible to increase the learning motivation and result in better learning achievement. In this study, 165 primary school teachers and 2800 students were randomly selected. Leadership styles and learning motivation questionnaires were designed for research instruments. In the data analysis, descriptive statistics analysis, Pearson correlation analysis, multiple regression analysis were adopted. The results showed that: 1) Both the transformational and transactional leadership styles have been employed by elementary school teachers in this study. 2) The correlations between the above two leadership styles and the learning motivation of students are both "moderate to good relationship". 3) The transformational and the transactional leadership styles can explain 52.60% of variance for the learning motivation of students. 4) Multiple regression analysis can be used to infer causal relationships between the leadership styles of teachers and the learning motivation of students.

KEYWORDS

Improving Classroom Teaching; Elementary Education

1. Introduction

All over the world, teaching is one of the most complicated jobs nowadays. It requires broad knowledge of the subject matter, curriculum, enthusiasm, and a lot of learning, knowledge of discipline and advanced leadership styles. Many studies suggested the single most important factor determining the quality of the education a child receives is the quality of his teacher.

Leadership has always been a contentious issue among many researchers. Thousands of papers and hundreds of researches have been done on this topic [1]. Robbins and Coultar [2] proposed the leadership as "process of influencing a group towards the achievements of goals". He also defined the leader as "someone who can influ-

ence others and who has managerial authority". The performance of any group can be set by the performance of the leader. If the leader's performance is high, then the performance of the groups will also be high [3].

There is an old saying "*Birds of a feather flock together*" which implies that birds of the same species (*i.e.* with similar plumage) often tend to gather to feed or migrate together. It also means that people who are similar will spend more time together because they have something in common. In other words, this also shows that people will become similar if they spend more time together. A great Chinese teacher, Confucius (551 - 479 B.C.), also said, "*When I walk along with two others, they may serve me as my teachers. I will select their good qualities and follow them*". The above Confucian Analects can also be interpreted as that each member of the

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group will be affected by other members.

In this study, we try to investigate the effects of the leadership style on the learning motivation of students. The goals of this study were showed as follows:

1) To survey the leadership styles of science teachers and the learning motivation of students.

2) To investigate the correlation between leadership styles of teachers and the learning motivation of students.

3) To investigate the causal relationship between leadership styles of teachers and the learning motivation of students.

2. Literature Review

2.1. Concept of Leadership

Leadership has always been the subject of human study. This topic has been investigated by researchers, philosophers and historians time and again [4,5]. In psychology, trait theory is an approach to the study of human personality. Trait theorists are primarily interested in the measurement of traits, which can be defined as habitual patterns of behavior, thought, and emotion [6]. In twentieth century, trait theories on leadership and motivation were started and after that philosophers and researchers start working on the formal theories of leadership. From 1920-1960 researchers tried to find the leader's personality and character of leadership [7].

A famous idiom "*There are no poor soldiers under a good general*" can be taken as a good example to illustrate a great leadership principle. Those individuals are considered to the great leaders who can change themselves according to the demand of the situations. These individuals can adopt the pattern of leadership according to the needs [8]. There is a good example in human history. It is well known that Dr. Sun Yat-sen (1866-1925) was a Chinese revolutionary, first president and founding father of the Republic of China ("Nationalist China"). He originally worked as a medical doctor to rescue the sick people, but he was then transformed to be a revolutionary aiming to rescue the whole Chinese. It is very difficult to believe that a medical doctor can lead and influence so many followers to overthrow such a big country with 400 million people. Dr. Sun played an instrumental role in the overthrow of the Qing dynasty. From the above illustration, Dr. Sun is no doubt to be a great leader with very great leadership styles.

2.2. Teacher Belief, Culture and Leadership

Teacher beliefs are proposed to be an indicator for certain students' behaviors because of the mediating effects of beliefs on the ways of teaching via their impact on decision making [9,10]. For example, teachers who believed that collaborative learning could bring greater benefits than learning alone would tend to include more group work than teachers who see little or no learning value in collaboration. Furthermore, teacher beliefs are regarded as one of the most valuable constructs for teacher education [9,11]. Beliefs can guide teachers' behavior either deliberately or spontaneously. In a deliberate way beliefs are retrieved or constructed with a lot of effort in a certain context and they are assumed to guide goal setting and behavior. In a spontaneous way beliefs are activated by routine [12].

Culture is a modern concept based on a term first used in classical antiquity by the Roman orator Cicero: "cultura animi" (cultivation of the soul). This non-agricultural use of the term "culture" re-appeared in modern Europe in the 17th century referring to the betterment or refinement of individuals, especially through education [13]. Culture, or the way people behave in an organization can influence how a leader evaluates the performance of a group. Rhodes, Walsh and Lok state that the "development of a high-performance culture requires the inspiration, drive, and commitment of the leader, leadership is critical to the change process underpinning the Balanced Scorecard" [14]. Besides, according to the above authors, cultural values tend to have important implications on management practices, because "there is a positive relationship between a high performance culture and the adoption of best practices" [14]. For instance, the United States' culture is considered to be high performance and, if organizations are to remain competitive, they must employ best practices from around the globe. Some of these best practices may include the training and development of effective ethical leaders through succession planning and development because effective leaders require vision, knowledge, and execution skills [15].

2.3. Transformational Leadership Style

Transformational leadership enhances the motivation, morale, and performance of followers through a variety of mechanisms. These include connecting the follower's sense of identity and self to the project and the collective identity of the organization; being a role model for followers that inspires them and makes them interested; challenging followers to take greater ownership for their work, and understanding the strengths and weaknesses of followers, so the leader can align followers with tasks that enhance their performance [13].

James MacGregor Burns [16] was the first who introduced the concept of transforming leadership in his descriptive research on political leaders, but this term is now used in organizational psychology as well [17]. According to Burns, transforming leadership is a process in which "leaders and followers help each other to advance to a higher level of morale and motivation". Burns [16] related to the difficulty in differentiation between management and leadership and claimed that the differences

are in characteristics and behaviors. He has also established two concepts: "transforming leadership" and "transactional leadership". According to the concepts of Burns, the transforming approach creates significant change in the life of people and organizations. It redesigns perceptions and values, and changes expectations and aspirations of employees. Unlike in the transactional approach, it is not based on a "give and take" relationship, but on the leader's personality, traits and ability to make a change through example, articulation of an energizing vision and challenging goals [13]. Transforming leaders are idealized in the sense that they are a moral exemplar of working towards the benefit of the team, organization and/or community. Burns [16] theorized that transforming and transactional leaderships were mutually exclusive styles.

Bernard M. Bass [18] extended the concept of Burns [16] by explaining the psychological mechanisms that underlie transforming and transactional leadership. Bass proposed the term "transformational" in place of "transforming." Bass added to the initial concepts of Burns [16] to help explain how transformational leadership could be measured, as well as how it impacts follower motivation and performance. The extent to which a leader is transformational is measured first, in terms of his influence on the followers. The followers of such a leader feel trust, admiration, loyalty and respect for the leader and because of the qualities of the transformational leader are willing to work harder than originally expected. These outcomes occur because the transformational leader offers followers something more than just working for self gain. They provide followers with an inspiring mission and vision and give them an identity. The leader transforms and motivates followers through his or her idealized influence (earlier referred to as charisma), intellectual stimulation and individual consideration. In addition, this leader encourages followers to come up with new and unique ways to challenge the status quo and to alter the environment to support being successful. Finally, in contrast to Burns, Bass [18] believed that leadership can simultaneously display both transformational and transactional leadership.

2.4. Transactional Leadership Style

Within the context of Maslow's hierarchy of needs, transactional leadership works at the basic levels of need satisfaction, where transactional leaders focus on the lower levels of the hierarchy. Transactional leaders use an exchange model, with rewards being given for good performance or positive outcomes. Conversely, people with this leadership style also can punish poor achievement or negative outcomes, until the problem is corrected [18]. Transactional leadership is related to motivating the employees and making them do the works with the help

of external motivators such as organizational rewards [19]. Transactional leadership style focuses on the role of supervision, organization, and group performance, etc. As Tengilimoğlu [20] proposed that transactional leader generally works with a focus on continuing the works of the past and transferring them to future.

In general, transactional leadership has four dimensions: Conditional reward, management by exceptions (active), management by exceptions (passive) and laissez-faire [19,21]. Contingent reward means a process of mutual transaction where leader is trying to motivate the followers by rewards and promises [22]. Management by exceptions (active) is about leader's observing employees' performance and correcting their mistakes [18]. Management by exceptions (passive) implies leader's not intervening the organizational problems until they acquire a stricter situation and not acting before any kind of mistakes occurs [21]. Laissez-faire is a leadership style in which the leader never intervenes the administrative processes and gives limitless freedom to the followers [21,22]. One way that transactional leadership focuses on lower level needs is by stressing specific task performance. Transactional leaders are effective in getting specific tasks completed by managing each portion individually [18].

2.5. Leadership Style and Motivation

Motivation is a psychological feature that arouses an organism to act towards a desired goal and elicits, controls, and sustains certain goal-directed behaviors. It can be considered a driving force; a psychological one that compels or reinforces an action toward a desired goal [23]. In generally, it gets students moving, points them in a particular direction, and keeps them going. We often see students' motivation reflected in personal investment and in cognitive, emotional, and behavioral engagement in school activities [24].

Generally, most students are motivated in one way or another. Some student may be keenly interested in classroom subject matter and seek out challenging course work, participate actively in class discussions, and earn high marks on assigned projects. Another student may be more concerned with the social side of school, interacting with classmates frequently, attending extracurricular activities almost every day, and perhaps running for a student government office [25].

However, motivation is not necessarily something that students should bring to schools; it can also arise from environmental conditions at schools. When we think about how the environment can enhance a student's motivation to learn particular things, we are talking about situated motivation [26,27]. In the pages to come, we'll find that as teachers, they can do so many things to motivate students to learn and behave in ways that promote

their long-term success and productivity [23].

Typically, the school organization has a principal or headmaster as its primary leader, and a classroom organization has a teacher as its primary leader. A primary leader in classroom is someone who models, motivates, and initiates acts of leadership. In general, the leader pulls the organization to higher ground or to better achievement. It should be noted that this is different from pushing. Pushing can also motivate, but it is based on the avoidance of negative consequences.

In Taiwan, The Ministry of Education revised the Education Fundamental Act in 2005 which forbade the corporal punishment. Therefore, the traditional authoritative leadership styles must be modified to adapt to the present educational environment. Consequently, both the transformational leadership and transactional leadership styles have become the mainstream of education and hot research topics. Research results [28] showed that if teachers adopted both transformational leadership and transactional leadership styles, students usually had high academic performance. Besides, if teachers adopted only transactional leadership styles, students generally had low academic performance.

Up to now, related researches on this topic are still rather minor. Consequently, there is a need to conduct a research to establish if there is a relationship between teacher's leadership styles and learning motivation of students. The results could provide a useful material for the principal, and ministry of education.

3. Methods and Materials

3.1. Research Questions

This study was designed to address the following research questions:

1) What are the leadership styles of science teachers in this study?

2) Is there a correlation between leadership styles of teachers and learning motivation of students?

3) Is there a causal relationship between leadership styles of teachers and learning motivation of students?

3.2. Participants

The study was carried out with a total of 200 teachers from 171 primary schools in Changhua Couny of Taiwan (**Figure 1**). The number of returned and questionnaires is 165, the returned rate is 83%, invalid questionnaires are 0, effective questionnaires are 165, and the returned rate of effective questionnaires is 83%, respectively. Of all the primary teachers participating in the study, 50.5% are male and 49.5% are female. Of all the primary students participating in the study, 54.9% are male and 45.1% are female.

3.3. Instruments

In this study, we have designed two questionnaires which combined the results of the literature reviews of our survey.

1) Leadership questionnaire:

A questionnaire was designed by the authors mainly based on the leadership theory proposed by Bass [18], and literature reviews of Huang [28]. The above questionnaire was then divided into two parts. The first part included 4 sets of factors and 12 fill-in items aimed to explore the transformational leadership style. The 4 sets of factors are charisma influences, stimulating motivation, intellectual stimulation and individualized consideration. The second part included 3 sets of factors, and 9 fill-in items aimed to explore the transactional leadership style. The 3 sets of factors are mutually beneficial award, active management, and passive management. The items are rated on a five-point rating scale of Likert Type including "very agree" with "5", " agree" with "4", "partially agree" with "3", "disagree" with "2", "extremely disagree" with "1".

2) Learning motivation questionnaire:

Another questionnaire was designed by the authors mainly based on the "Motivated Strategies for Learning Questionnaire (MSLQ)" proposed by Wu and Cherng [29], and the questionnaire proposed by Pintrich, Smith, Garcia and Mckeachie [30]. In this study, the proposed questionnaire also referred the "learning motivation questionnaire" proposed by Huang [31]. This questionnaire included 3 sets of factors, and 14 fill-in items. The 3 sets of factors are value, expectancy, and affective factors.

To ensure and enhance the reliability and validity of the questionnaire, Cronbach's Alpha coefficient, corrected item-total correlation and factor analysis available in SPSS are selected in this study.

Cronbach's Alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability. Nunnaly [32] has proposed 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. The item-total correlation is a correlation between the question score and the overall assessment score. It is expected that if a participant gets a question correct they should, in general, he should have a higher overall assessment score than participants who get a question wrong. Also, it is generally accepted that the minimum value for this (item-total correlation) is 0.3.

Factor Analysis is a technique for finding a small number of underlying dimensions from among a large number of variables. This technique was used in this study to explore the possible underlying factor structure. By performing factor analysis, the underlying factor is identified, and data reduction can be achieved. There are generally two steps in factor analysis: namely, the ex-
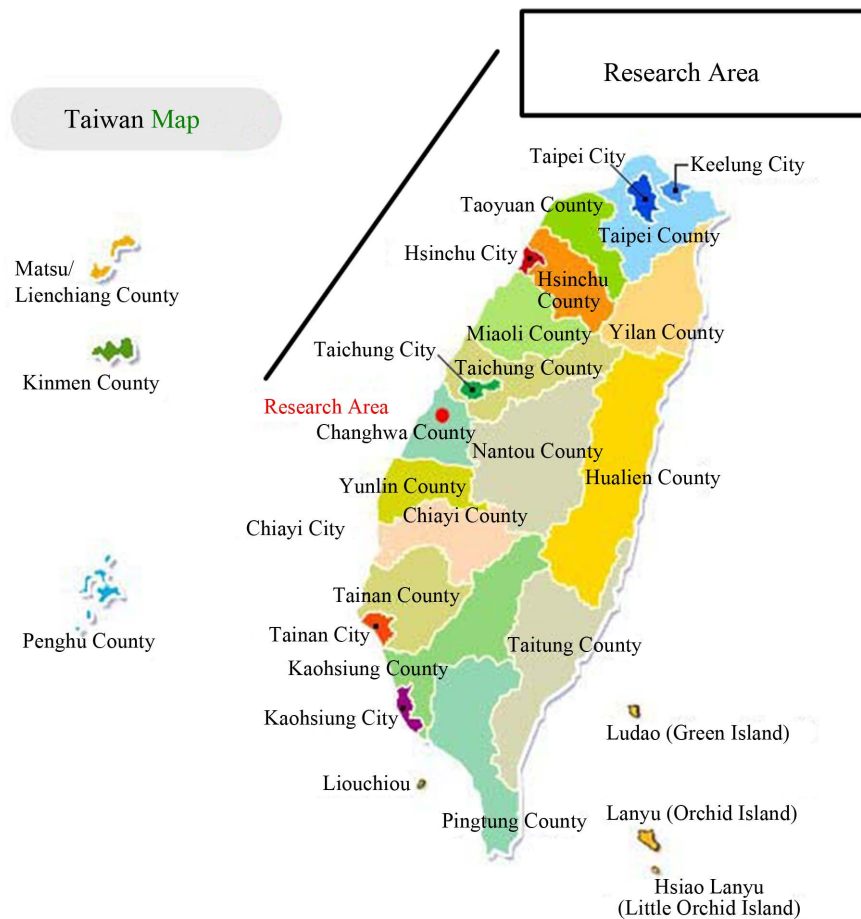
Figure 1. Location of research area, source: http://fangshiushiu.wordpress.com

traction of factors and the rotation of the factors. Principal component analysis (PCA) and Varimax rotation available in SPSS was selected in this study. PCA is a widely used method for factor extraction. Factor weights are computed in order to extract the maximum possible variance, with successive factoring continuing until there is no further meaningful variance left. The factor model must then be rotated for analysis. The Cronbach's Alpha coefficients were 0.92 and 0.95 for the first part and second part of the questionnaire, and this implies a substantial degree of reliability.

Table 1 showed the results of the factor analysis for the purpose of validity test for the instrument of transformational leadership style. The results indicated that the questionnaire can explain 74.271% of the total variance for the data. Also, the eigenvalues of the 4 factors are also acceptable (should be higher than 1.00). To investigate whether the factor model is appropriate, Kaiser-Meyer-Olkin Measure and Barlett's Test of Sphericity available in SPSS is adopted in this study. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (*KMO*) is 0.89, and this value can be considered to be acceptable (should be 0.6 or above).

Table 2 showed the results of the factor analysis for the purpose of validity test for the instrument of transactional leadership style. The results indicated that the questionnaire can explain 80.56% of the total variance for the collected data. Also, the eigenvalues of the 3 factors are also acceptable (should be higher than 1.00). To investigate whether the factor model is appropriate, again, Kaiser-Meyer-Olkin Measure in SPSS is adopted in this study. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (*KMO*) is 0.79, and this value can be considered to be acceptable (should be 0.6 or above).

Table 3 showed the results of the factor analysis for the purpose of validity test for the instrument of students' learning motivation. The results indicated that the questionnaire can explain 54.01% of the total variance for the collected data. Also, the eigenvalues of the 3 factors are also acceptable (should be higher than 1.00). Again, to investigate whether the factor model is appropriate, again, Kaiser-Meyer-Olkin Measure available in SPSS is adopted in this study. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (*KMO*) is 0.78, and this value can be considered to be acceptable (should be 0.6 or above).

Table 1. Factor analysis of the instrument of transformational leadership style.

No. of Items	Factor 1[a]	Factor 2[b]	Factor 3[c]	Factor 4[d]
10	0.795			
12	0.754			
11	0.752			
7		0.839		
9		0.734		
8		0.568		
2			0.788	
1			0.756	
3			0.598	
5				
4				
6				
Total eigenvalue	2.534	2.391	2.174	1.813
% of variance	21.118%	19.922%	18.120%	15.111%
Cumulative % of variance	21.118%	41.041%	59.160%	74.271%
KMO = 0.89				

[a]Factor 1: individualized consideration, [b]Factor 2: intellectual stimulation, [c]Factor 3: charisma influences, [d]Factor 4: stimulating motivation.

Table 2. Factor analysis of the instrument of transactional leadership style.

No. of Items	Factor 1[a]	Factor 2[b]	Factor 3[c]
17	0.916		
16	0.884		
18	0.874		
13		0.877	
14		0.856	
15		0.842	
21			0.862
19			0.837
20			0.824
Total eigenvalue	2.618	2.445	2.187
% of variance	29.094%	27.163%	24.300%
Cumulative % of variance	29.094%	56.257%	80.557%
KMO = 0.79			

[a]Factor 1: active management, [b]Factor 2: mutually beneficial award, [c]Factor 3: passive management.

Table 3. Factor analysis of the instrument of students' learning motivation.

No. of Items	Factor 1[a]	Factor 2[b]	Factor 3[c]
26	0.767		
24	0.748		
25	0.744		
22	0.715		
23	0.475		
31		0.780	
30		0.677	
32		0.605	
27		0.580	
28		0.525	
29		0.524	
34			0.816
33			0.790
35			0.714
Total eigenvalue	2.790	2.500	2.272
% of variance	19.929%	17.857%	16.225%
Cumulative % of variance	19.929%	37.786%	54.011%
KMO = 0.78			

[a]Factor 1: Value, [b]Factor 2: Expectation, [c]Factor 3: Emotion.

3.4. Data Analyses

The descriptive statistics, Pearson product-moment correlation analysis and stepwise multiple regression analysis available in SPSS Statistical Package were selected in this study. The descriptive statistics is used to provide a general understanding of the collected data. Pearson product-moment correlation analysis and multiple regression analysis are adopted to investigate the correlation and causal relationship between leadership styles of teachers and learning motivation of students.

4. Results and Discussions

4.1. General Information

The results for the descriptive statistical analysis on the seven factors of the two leadership styles were shown in **Table 4**. The mean score, standard deviation (SD) and ranking of the two leadership styles were calculated.

For the transformation leadership style (see **Table 4**), it can be seen that the charisma influences factor performed the maximum average score (M = 4.44; ranking = 1), while the stimulating motivation factor exhibited the

Table 4. Descriptive statistics results of two leadership styles (N = 2800).

Leadership styles	factor	mean score	SD.	ranking
Transformation leadership	1. charisma influences	4.4410	0.74288	1
	2. stimulating motivation	3.4683	1.13624	4
	3. intellectual stimulation	3.8339	1.05950	2
	4. individualized consideration	3.7756	1.00868	3
Average score		3.7759	0.85776	
Transactional leadership	1. mutually beneficial award	3.1767	1.33541	3
	2. active management	4.4048	0.80503	1
	3. passive management	3.2499	1.14904	2
Aggregate average score		3.6104	0.86962	

Table 5. Descriptive statistics results for learning motivation of students (N = 2800).

Learning motivation	factor	Mean Score	SD	ranking
Learning motivation of students	1. Value	4.1664	0.85088	1
	2. Expectancy	4.0109	0.77048	2
	3. Affective	3.1114	1.36887	3
Aggregate average score		3.8737	0.72463	

minimum average score (M = 3.47; ranking = 4). For the transactional leadership style, the active management factor performed the maximum average score (M = 4.41; ranking = 1), while the mutually beneficial award factor exhibited the minimum average score (M = 3.18; ranking = 3).

Moreover, it can be seen that the average scores for the above two leadership style are 3.78 and 3.61 (see **Table 4**), respectively. As mentioned before, five-point rating scale of Likert Type was adopted in this study. The above results imply that the most frequently ratings filled in by students are 3 and 4. That is to say, "agree" and "partially agree" are most frequently selected by students. In other words, most students in the research area thought that their teachers have adopted both the above two leadership styles.

The results for the descriptive statistical analysis on the three factors of the learning motivation of students were shown in **Table 5**. The mean score, standard deviation (SD) and ranking were calculated. It can be seen that the value factor performed the maximum average score (M = 4.17; ranking = 1), while the emotion factor exhibited the minimum average score (M = 3.11; ranking = 3). Moreover, it can be seen that the average score for the learning motivation of students is 3.87 (see **Table 5**). Again, the above results imply that the most frequently ratings filled in by students are 3 and 4. That is to say, "agree" and "partially agree" are most frequently selected by students.

4.2. The Correlation between Leadership Styles and Learning Motivation

4.2.1. Transformational Leadership Style and Learning Motivation

The correlation coefficients (r) between dependent varia-ble (learning motivation of students) and independent variable (transformational leadership style) were showed in **Table 6**. **Table 6** showed that learning motivation of students and transformational leadership style are all positive correlation. Moreover, Except the correlation between emotion factor and transformational leadership style is low correlated (r = 0.18, r = 0.24, r = 0.25, r = 0.28, r = 0.31). Other correlations are considered to be moderately correlated.

4.2.2. Transactional Leadership Style and Learning Motivation

The correlation coefficients (r) between dependent varia-ble (learning motivation of students) and independent variable (transactional leadership style) were showed in **Table 7**. **Table 7** showed that learning motivation of students and transactional leadership style are all positive correlation. Only two correlation coefficients (r) are low correlated (r = 0.15 and r = 0.34). Other correlations are considered to be moderately correlated.

4.3. The Causal Relationship between the Leadership Styles of Teachers and Learning Motivation of Students

The results of the multiple regression analysis were shown in this section. Seven independent variables (cha-risma influences, stimulating motivation, intellectual stimulation, individualized consideration, mutually bene-ficial award, active management and passive manage-ment) have been selected into the regression equation. **Table 8** showed the coefficient of determination (de-noted R^2) obtained from the regression analysis using SPSS statistics software, indicated how well data points fit a line or curve. The results showed that the value of adjust R Squared is 0.53 for all the seven independent variables (**Table 8**) which implies that the mutiple re-gression equation can explain 52.60% of variance for the learning motivation of students.

Based on the aforementioned regression analysis, the following model can be postulated as a prediction tool.

Y (learning motivation) = 0.195 × X_1(individualized consideration) + 0.279 × X_2(passive management) +

Table 6. Correlations between transformational leadership style and learning motivation (N = 2800).

Correlation (r)	Transformational leadership factor				
Learning motivation factor	charisma influences	stimulating motivation	intellectual stimulation	individualized consideration	aggregate transformational leadership
Learning motivation factor					
Value	0.567[**]	0.487[**]	0.534[**]	0.558[**]	0.608[**]
Expectancy	0.510[**]	0.497[**]	0.558[**]	0.569[**]	0.621[**]
Affective	0.177[**]	0.242[**]	0.245[**]	0.281[**]	0.306[**]
Aggregate learning motivation	0.542[**]	0.528[**]	0.578[**]	0.607[**]	0.661[**]

[**] $p < 0.01$, [**]Correlation is significant at the 0.01 level (2-tailed).

Table 7. Correlations between transactional leadership style and learning motivation (N = 2800).

Correlation (r)	Transformational leadership factor			
Learning motivation factor	Contingent reward (mutually beneficial award)	Active management	Passive management	Aggregate transactional leadership
Learning motivation factor				
Value	0.412[**]	0.548[**]	0.344[**]	0.531[**]
Expectancy	0.453[**]	0.525[**]	0.443[**]	0.589[**]
Affective	0.345[**]	0.154[**]	0.439[**]	0.418[**]
Aggregate learning motivation	0.519[**]	0.531[**]	0.523[**]	0.660[**]

[**] $p < 0.01$, [**]Correlation is significant at the 0.01 level (2-tailed).

Table 8. Coefficient of determination (R^2) obtained from the regression analysis (N = 2800).

Independent variables	R	Adjust R-squared	R-squared change	F value
Individualized consideration	0.607	0.368	0.368	1,630.089[***]
individualized consideration	0.685	0.469	0.101	535.178[***]
passive management	0.712	0.506	0.037	211.130[***]
Intellectual stimulation	0.721	0.520	0.013	78.105[***]
Active management	0.724	0.524	0.004	25.772[***]
Stimulating motivation	0.726	0.525	0.002	11.037[***]
Award mutually beneficially	0.726	0.526	0.001	4.569[***]

$P = 0.000$, [***]$p < 0.001$, Correlation is significant at the 0.01 level (2-tailed).

$0.178 \times X_3$(charisma influences) + $0.119 \times X_4$(intellectual stimulation) + $0.096 \times X_5$(active management) + $0.049 \times X_6$(stimulating motivation) + $0.042 \times X_7$(award mutually beneficially)

5. Conclusions and Recommendations

5.1. Conclusions

According to the above-mentioned analysis results, the following conclusions were drawn:

1) From the above study results, it can be found that both the transformational and transactional leadership styles have been employed by elementary school teachers in Changhua County of Taiwan.

2) The correlations between the above two leadership styles and the learning motivation of students are both "moderate to good relationship".

3) The transformational and the transactional leadership styles can explain 52.60% of variance for the learning motivation of students

4) Multiple regression analysis can be used to infer causal relationships between the leadership styles of

teachers and the learning motivation of students.

5.2. Recommendations

The author proposes the following recommendations for schools and teachers who would like to engage in instructional innovation.

1) According to the study results, the coefficient of determination (R^2) for the individual consideration factor of the transformational leadership style is 0.37, which implies that the individual consideration factor can explain 36.80% of the learning motivation of students. Therefore, it is suggested that teachers can employ the individual consideration in the leadership style to support various individual consideration according to different student types.

2) According to the study results, the sum of the coefficient of determination (R^2) for the seven factors of the transformational leadership and transactional leadership styles is 0.526. This implies that the above two leadership styles can explain 52.6% of the learning motivation of students. Therefore, if a teacher can employ both the above leadership styles, the learning motivation of students can be well stimulated.

3) Students' learning motivation could be affected by several factors, for example: social factor, family factor, school environmental factor, teacher's factor, student's personal factor, etc. This study focused on the relationship between teachers' leadership styles and students' learning motivation. Other factors could be further investigated in future work.

4) Only quantitative analysis has been adopted in this study. It is suggested that qualitative research method could be employed in future work to provide more useful information for students' learning motivation.

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