

Leadership Research of Taiwanese College Students' Learning Environment and Education Quality

Chia-Tsung Lee, Chia-Hui Lin, and Yin-Tsup Huang

Abstract—The current era of globalization has caused a phenomenon in business and educational organizations. Leadership has focused on broadening the globalized academic context (Dimmock & Walker, 2000; Webber & Robertson, 2003). The Taiwan Ministry of Education (MOE) launched the environment of the e-Future classroom to compete in globalization (MOE, 2011). A quantitative, research design explored the relationship between background demographic characteristics, transformational, and transactional leadership styles, learning environment, and education quality. A sample survey of 350 higher education students was developed with four components. The data collection included 292 returned surveys from 350 distributed, yielding an 83% return rate.

Index Terms—Leadership styles, learning environment, quality education.

I. INTRODUCTION

The current era of globalization has generated a phenomenon in business and educational organizations. Leadership has attempted to broaden the globalized academic context [1], [2]. The current worldwide transformation of universities has become common and some institutions have begun to resemble each other [3]. The increase of Taiwan universities has challenged academic leaders more than ever before in a fierce competitive higher education market [4], [5].

Taiwan higher education includes college and universities, graduate schools, and post-graduate programs. The Taiwan Ministry of Education (MOE) launched the environment of the e-Future classroom to compete with globalization [6]. Lewin [7] believed that all behaviors and experiences reflect a person's environment. Constructive learning environments are learner-centered, so students become active participants in education areas. Therefore, in the learning centered environment, students focus on learning rather than teaching [8]. College institutions have a serious battle because of their uneven distribution of resources.

Different leadership styles might influence the learning environment and education quality of various colleges in Taiwan. This study examines the higher educational leadership styles, learning environment, and educational quality in Taiwan.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Leadership has been defined in various ways in the past 60 years. "Academic leadership is one of the most important factors when initiating and implementing institutional development or change process" [5]. Leadership is "a process whereby an individual influences a group of individuals to achieve a common goal" [9].

A. Transactional and Transformational Leadership

Transformational leadership is a process that motivates and inspires teams to be effective and efficient. Leaders have high visibility and commend getting a job done [10]. The role of transformational leadership needs the challenge of changing times [11]. Bass and Avolio [12] suggested five component of transformational leadership: a) idealized influence or attributed charisma; b) idealized influence or behavioral charisma; c) inspirational motivation; d) intellectual stimulation; and e) individualized consideration

Transactional leadership confirms the relationship between performance and reward and gives leaders the opportunity to lead the group and to accomplish goals in exchange for something else [10]. Transactional leadership has remained as the organizational model [11]. Bass and Avolio [12] suggested three components of a) contingent reward; b) management by exception (passive); and c) management by exception (active).

Lewin [13] introduced his seminal theory on the influence of leadership styles based on the leader's decision-making behavior. This theory identifies three major constructs of authoritarian, democratic, and Laissez-fair leadership. Similar to Lewin's [13] model, the theory has been revised and adapted to the behavior leadership model [14]. John Adair [15] developed an action-centered leadership model depicting the direct and indirect relationship among task, individual, and team concepts, which continues to be examined today [11]. James MacGregor Burns [16] was the first to apply his concept to transformational leadership. Studies by Tichy and Devanna [17] described the hybrid nature of transformation. Bass and Avolio [12] created the four dimensions of transformational leadership, transactional leadership, non-transactional leadership, and leadership outcomes in the *Multifactor Leadership Questionnaire* (MLQ).

B. Learning Environment

The learning environment field has undergone 30 years of diversification and internationalization [18]. Fraser [18] described that classroom environment quality plays a significant role in student learning. International research in this field involves the assessment, conceptualization, and

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investigation of perceptions of the classroom environment [19], [20].

Jonassen [21] proposed a model for designing constructivist learning environments and introduced three components in constructivist learning environments: problem, question, or project as the focus of the environment. Hannafin, Land, and Oliver [22] mentioned, "Learning environments are typically constructivist in nature, engaging learners in "sense-making" or reasoning about extensive resource sets". This theory identifies four major constructs or components: an enabling context, resources, a set of tools, and scaffolds.

Jonassen [23] identified the following design goals for constructivist learning environments:

- Negotiation, rather than imposition, of goals and objectives;
- Task analysis consideration be given to appropriate interpretations and provision of intellectual tools necessary to learners for constructing knowledge;
- Promotion of multiple perspectives of reality through these tools and within the environment;
- Provision of generative, mental construction "tool kits" embedded in relevant learning;
- Environments that facilitate knowledge construction by learners; and
- Evaluation should become more goal-free and reflective .

Fig. 1 presents Jonassen's conceptualization of design elements for a constructivist-learning environment, which focuses on "keeping students active, constructive, collaborative, intentional, complex, contextual, conversational, and reflective" [24].

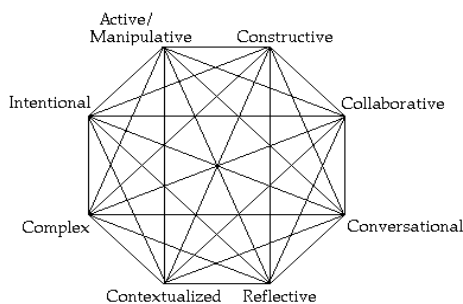


Fig. 1. Designing a constructivist learning environment (adopted from Jonassen's 1999).

C. Quality of Education

Cheng and Tam [25] defined education quality as "the character of the set of elements in the input, process, and output of the education system that provides services that completely satisfy both internal and external strategic constituencies by meeting their explicit and implicit expectations". Tam and Chen [25] proposed seven models to evaluate the concept of education quality : (1) goal and specification model; (2) resource-input model; (3) process model; (4) satisfaction model; (5) legitimacy model; (6) absence of problems model; and (7) organizational learning model. The evaluation of the process model of quality

education includes leadership, classroom climate, social interaction, participation, experiences, and learning activities. Educational quality contains various components: effectiveness, efficiency, equality, relevance, and sustainability [26].

D. Hypothesis

- H1: Learning environment and education quality have statistical difference on teachers' transformational and transactional leadership styles.
- H2: A background demographic characteristic with type of school (public school, private school) has significant explanatory variables of perceived transformational and transactional leadership, learning environment, and education quality.
- H3: Teachers' transformational leadership style is statistically significant for learning environment.
- H4: Teachers' transactional leadership style is statistically significant for education quality.
- H5: Teachers' transformational leadership styles (idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, and individualized consideration) and transactional leadership styles (contingent reward, active management by exception, passive management by exception) are significant explanatory variables of perceived learning environment (student cohesiveness, teacher support, involvement, order and organization, task orientation, cooperation, equity).
- H5a: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with student cohesiveness.
- H5b: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with teacher support.
- H5c: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with involvement.
- H5d: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with order and organization.
- H5e: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with task orientation.
- H5f: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with cooperation.
- H5g: Teachers' transformational leadership styles and transactional leadership styles are significant explanatory variables of perceived learning environment with equity.

III. METHODOLOGY

A. Research Design

A non-experimental, quantitative, SPSS 17.0, research

design explored the relationship of background demographic characteristics, transformational and transactional leadership, learning environment, and education quality.

B. Population and Sampling Plan

C. Target Population

According to the Taiwan Ministry of Education Department of Statistics [6], there are nine colleges and universities in Taichung City and County and three colleges and universities in Chiayi City and County. Target populations were 177 college students in Taiwan. The convenience sample included students enrolled in National Taichung University of Education, Ling Tung University, and Toko University in Taiwan.

D. Sampling Plan

The entire accessible population was invited to participate in the study. However, the final data-producing sample was self-selected depending on those who agreed to participate in the study.

E. Instrumentation

The instrument used in this study includes four parts: For the surveys, (1) *Background Demographic Characteristics* were developed by the researchers, (2) transformational and transactional leadership-measured by two of the five factors of the *Multifactor Leadership Questionnaire (MLQ Form 5x-short)*, was developed by Bass and Avolio [12], (3) learning environment was measured by seven factors of *What Is Happening In This Class? (WIHIC)*, developed by Fraser, Fisher, and McRobbie [27], (4) quality of education was measured by four of the six factors of *Instructions for Delphi Survey*, developed by Dalkey [28].

IV. RESULT

A. MANOVA Analysis

In Hypothesis 1, learning environment and quality education have statistical difference for teachers' transformational and transactional leadership style.

TABLE I: MANOVA ANALYSIS OF TRANSFORMATION AND TRANSACTIONAL LEADERSHIP, LEARNING ENVIRONMENT, AND QUALITY OF EDUCATION

Variables	df	SSCP	Sig.
Learning Environment	4	[6.419 5.925]	.050
		[5.925 9.230]	.044
Quality Education	4	[.492 -.554]	.004
		[-.554 4.068]	.020
Learning Environment * Quality Education	9	[3.121 .446]	.025
		[.446 8.628]	.041
Error	18	[121.523 67.324] [67.324 199.267]	

B. Logistic Regression Analysis

In Hypothesis 2, a background demographic characteristic with the type of school (public school, private school) has significant explanatory variables of perceived

transformational and transactional leadership, learning environment, and quality of education.

TABLE II: LOGISTIC REGRESSION ANALYSIS WITH A BACKGROUND DEMOGRAPHIC CHARACTERISTIC OF TYPE OF SCHOOL (PUBLIC SCHOOL, PRIVATE SCHOOL), TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP, LEARNING ENVIRONMENT, AND QUALITY OF EDUCATION

	B	S.E.	Wald	df	Sig.	Exp(B)	
Step 0	Constant	1.417	.148	92.048	1	.000	4.123
Step 0	Variables	TransformationLeadershipAVG	4.560	1	.033		
		TransactionalLeadershipAVG	.410	1	.522		
		LearningEnvironmentAVG	9.243	1	.002		
		QualityEducationAVG	.023	1	.879		
		Overall Statistics			17.78	4	.001

C. One-Way ANOVA Analysis

In Hypothesis 3, teachers' transformational leadership style has statistical significance for learning environment.

TABLE III: ANOVA ANALYSIS OF TRANSFORMATIONAL LEADERSHIP STYLE AND LEARNING ENVIRONMENT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.442	4	4.610	7.720	.000
Within Groups	171.394	287	.594		
Total	189.836	291			

a. Predictors: (Constant), Transformational leadership style

b. Dependent Variable: Learning environment

In Hypothesis 4, teachers' transformational leadership style has no statistical significance for quality education.

TABLE IV: ANOVA ANALYSIS OF TRANSACTIONAL LEADERSHIP STYLE AND QUALITY EDUCATION

	Sum of Squares	df	Mean Square	F	Sig.
Between Group	4.557	4	1.139	2.036	.089
Residual	160.608	287	.560		
Total	165.164	291			

a. Predictors: (Constant), Transactional leadership style

b. Dependent Variable: Quality education

D. Two-Way ANOVA Analysis

In Hypothesis 5a, 5b, 5c, 5d, 5f, and 5g, transformational leadership styles and transactional leadership styles have no significant explanatory variables of perceived learning environment with *student cohesiveness, teacher support,*

involvement, order and organization, cooperation, and equity.

In Hypothesis 5e, transformational leadership styles and transactional leadership styles have a significant explanatory variable of perceived learning environment with *task orientation*.

E. Reliability Analysis

Cronbach’s alphas and item analyses were conducted on all variables: alphas=.887.

TABLE V: CRONBACH ALPHA COEFFICIENTS OF TRANSFORMATIONAL LEADERSHIP STYLE, TRANSACTIONAL LEADERSHIP STYLE, LEARNING ENVIRONMENT AND QUALITY EDUCATION

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.887	.887	13

F. Factor Analysis for Construct Validity

TABLE VI shows the results of KMO and Bartlett’s test of sphericity. The value of KMO was 0.872.

TABLE VI: KMO AND BARTLETT’S TEST RESULTS ON TRANSFORMATIONAL LEADERSHIP STYLE, TRANSACTIONAL LEADERSHIP STYLE, LEARNING ENVIRONMENT, AND QUALITY EDUCATION

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.872
Bartlett's Test of Sphericity	Approx. Chi-Square		1758.171
	df		78
	Sig.		.000

TABLE VII: EXTRACTION SUMS OF SQUARED LOADINGS ON TRANSFORMATIONAL LEADERSHIP STYLE, TRANSACTIONAL LEADERSHIP STYLE, LEARNING ENVIRONMENT, AND QUALITY EDUCATION

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.691	43.776	43.776	5.691	43.776	43.776
2	1.488	11.447	55.223	1.488	11.447	55.223
3	1.250	9.615	64.838	1.250	9.615	64.838
4	.776	5.967	70.805			
5	.597	4.595	75.400			
6	.556	4.275	79.675			
7	.524	4.032	83.707			
8	.480	3.690	87.397			
9	.459	3.529	90.926			
10	.383	2.947	93.874			
11	.358	2.754	96.628			
12	.246	1.895	98.523			
13	.192	1.477	100.000			

Extraction Method: Principal Component Analysis.

TABLE VII indicates that five factor values were larger than one after varimax rotation was extracted, which accounted for almost 65% of total variance.

V. CONCLUSIONS

This study explored the relationship among demographic characteristics, teachers’ transformational leadership style, teachers’ transactional leadership style, learning environment, and education quality among 350 randomly selected Taiwan higher education college students. The survey instruments were used in three colleges for data collection. In total, 292 survey questionnaires were returned, with a return rate of 83%.

Analysis of the research results found a significant relationship among learning environment, quality education, and teachers’ transformational and transactional leadership styles. A background demographic characteristic with type of school (public school, private school) was also statistically significant for transformational and transactional leadership, learning environment, and quality of education. Teachers’ transformational leadership style was significant for learning environment. Transformational leadership styles and transactional leadership styles did not have a significant explanatory variable of perceived learning environment with *task orientation*.

However, teachers’ transformational leadership style showed no statistical significance for quality education. Transformational leadership styles and transactional leadership styles did not have significant explanatory variables of perceived learning environment with *student cohesiveness, teacher support, involvement, order and organization, cooperation, and equity*.

VI. PRACTICAL IMPLICATIONS

Leadership styles do play an important role for learning environment and education quality in higher education. The findings of this study might benefit Taiwan higher education organizations, companies, and educational departments. These institutions could focus on educators’ leadership styles to improve the learning environment and education quality.

VII. FUTURE STUDY AND LIMITATIONS

This study was limited to Taiwan undergraduate students within three colleges. The study only focused on a quantitative study with 350 students. Fifteen minutes of answering a survey might not be enough for students fill in and consider all of the questionnaires. Future studies might adopt more methods and explore various variables. The accessible population should be enlarged to strengthen the generalizability of the study.

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