

The Influence of Teachers' Self-efficacy on Innovative Work Behavior

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Abstract—The purpose of this study aims to examine the influence of Teacher Self-efficacy on Innovative Work Behavior. The randomly stratified sampling method is used in this study to select 546 secondary school teachers from 20 public/private schools in the northern region of Taiwan. The data is analyzed using the descriptive statistics, Pearson's correlation coefficients, and regression analysis. First, the results indicate that out of the three important ranking is at Teachers' self-efficacy, two are at "Self-efficacy towards Guiding Groups"-related, and one is at "Self-efficacy towards Using Innovations." However, the results indicate that three domains of Teachers' Self-efficacy in this study are well-performance as well as Innovative Work Behavior. The results also indicate that there is a strong positive relationship between Teachers' Self-efficacy (TSE) and Innovative Work Behavior (IWB). However, there is no statistical correlation between Self-efficacy towards using innovations and IWB's all scales. Teachers with higher self-efficacy have shown better work innovative behavior. TSE is a significant contributing factor to IWB. Several recommendations are made in the study.

Keywords- Teachers' Self-efficacy; Innovative Work Behavior; secondary school

I. INTRODUCTION

According to social cognitive theory, teachers' self-efficacy may be associated with the positive teaching behaviors and student outcomes [1]. Teachers' self efficacy refers to "their beliefs in their ability to have a positive effect on student learning" [2]. Teachers play an important role in the success of students. Teachers' self-efficacy has been found to be associated with student motivation, teachers' adoption of innovations, teachers' competence as rated by superintendents, effective classroom management strategies of the teacher, time spent on different subjects, and teachers' referrals of students to special education [3]. Despite the perception of teachers' self-efficacy has been shown to predict teachers' goals and teachers' attitudes toward innovation and change [4]. However, individuals with high self-efficacy are more likely to undertake more challenging activities involving more creative practices [5].

The definition of innovative work behavior can be defined as "discretionary employee actions which go beyond prescribed role expectations" [6]. Innovative behavior goes beyond creativity to include the adoption, production, and implementation of novel and useful ideas [7]. According to Kumar and Uzkuurt, their study has explored the influence of self-efficacy on the innovativeness of professionals with a cultural context. Their results indicate that there is a positive relationship between self-efficacy and innovativeness among the Turkish consumers [8]. It is possible that people with a strong sense of self-efficacy can result in more creativity behavior. It might thus be argued that the concepts of self-efficacy and innovative work behavior are at least in some part related to each other.

Based on the above, this study aims to explore the status of teachers' self-efficacy and innovative work behavior for teachers. Then, understand the relationship between teachers' self-efficacy and innovative work behavior. Figure 1 illustrates the model developed for this purpose.

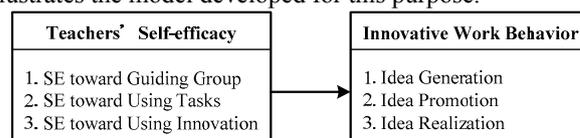


Figure 1. The proposed model

II. LITERATURE REVIEW

A. Teachers' self-efficacy

Perceived self-efficacy is defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives [9]." According to Bandura, individuals with a high sense of self-efficacy belief are more likely to have higher levels of performance and higher commitment to tolerate frustration and to remain task-focused when obstacles arise [10]. Based on social cognitive theory teachers' self-efficacy has conceptualized as individual teachers' beliefs in their own ability to plan and organize, then to carry out activities that are required to attain given

educational goals [11]. A teacher with a higher perception on self-efficacy is more confident about their abilities and, therefore, more likely to stay in the teaching profession [12]. Teachers who have a high sense of self-efficacy are usually effective approaches in the classroom. When teachers have a strong positive self-efficacy, students benefit from teachers with a high sense of self-efficacy. Teachers with strong self-efficacy beliefs seem to be more prepared to experiment with, and later also to implement new educational practices.

B. 2.2. Innovative Work Behavior

Individuals' innovative behaviors in the workplace include actions such as seeking out new ideas, championing ideas at work, and securing funds/planning for the implementation of ideas [7]. According to Farr and Ford, they define innovative work behaviors as an individual's behavior to achieve the initiation and intentional introduction (within a work role, group or organization) of new and useful ideas, processes, products or procedures [13]. Previous studies have found that employees with stronger creative self-efficacy are more likely to engage in higher levels of creativity in their work [14] [15], and thus higher creative will tend to actually practice creativity when they perceive strong support from their organization [16].

III. METHOD

A. Sample

Participants in this study are randomly selected from 20 secondary schools in the north region of Taiwan. For each school, the number of female teachers exceeds that of male teachers. 64.5% of respondents were female. The final samples include 546 secondary school teachers, which accounted for 91% of the sample. Missing participants are found on questionnaires from 54 teachers. The average age of participants in the study is 35.2 years with a range of 28~52 years. The average tenure at the school is 12 years. According to respondents' self-identification, 4.4% are supervisors, 12.5% are directors, and 83.2% are general staff.

B. Procedures

In order to develop a valid and reliable questionnaire, several items are formulated based on related literature and on previous studies in this study. The questionnaire consists of two sections. The first section is about demographic information. The second section consists of 13 items concerning the Teachers' Self-efficacy Scale (TSE), and 9 items relating to the Innovative Work Behavior Scale (IWB). All scales comprised 7-point Likert-type items. The second section contains 22 items. The average time for completing each questionnaire is 25 minutes.

C. Measures

- *Teachers' Self-efficacy Scale*

The Teachers' Self-efficacy Scale implemented in this study was developed by Evers, Brouwers, and Tomic [17]. The Teachers' Self-efficacy Scale consists of 3 components: Self-efficacy beliefs about guiding groups in a differentiating way, Self-efficacy beliefs about involving pupils in tasks,

and Self-efficacy beliefs towards the use of innovative educational practices. All items are rated using a 7-point scale ranging from 1 (Very strongly disagree) to 7 (Very strongly agree). Sample items include "I always assess well what is going on when a group works in a troublesome way," "I am able to give the necessary clues to pupils they need in searching for relevant information for a task," and "I can cope well with stress originating from innovative educational changes such as the Study-home." Internal consistency is measured with Cronbach's alpha ($\alpha = .86$).

- *Innovative Work Behavior Scale*

The Innovative Work Behavior Scale implemented in this study is developed by Janssen [6], consisting of 9 items, each of which followed by a 7-point responses scale ranging from 1 (Very strongly disagree) to 7 (Very strongly agree). The Innovative Work Behavior (IWB) scale consists of 3 components: idea generation, idea promotion, and idea realization. Sample items included "Creating new ideas for difficult issues," "Mobilizing support for innovative idea," and "Introducing innovative ideas into the work environment in a systematic way." The original reliability of this scale is measured with Cronbach's alpha ($\alpha = .91$).

D. Data Analysis

Participants are asked to complete the questionnaire in their own time there was no set time limit. The data can be analyzed using the descriptive statistics, Pearson's correlation coefficients, and regression analysis. Considering the aims of the study, descriptive statistics are used to describe and summarize the properties of the mass of data collected from respondents. Then, correlation analysis is used to find the relationship between teachers' self-efficacy and innovative work behavior. Furthermore, through the regression analysis, teachers' self-efficacy can be viewed as predictor to explain innovative work behavior of teachers.

IV. RESULTS

A. On analysis of descriptive statistics of Work Self-efficacy

Table 1 illustrates the ranking of teachers' self-efficacy. The data gathered from the questionnaire indicates that "When a group is disruptive I am able to get them back to work again quickly", is the highest in importance rating scale (5.71), followed by "If pupils experience difficulties in carrying out a task, I can make them think about finding solutions themselves (5.70)," and "In general I can cope quite well with stress that attends the implementation of educational innovations, as for example the Study-home (5.69)." Out of the three important ranking are at teachers' self-efficacy, two are "Self-efficacy towards Guiding Groups"-related, and one is "Self-efficacy towards Using Innovations"

The least important ranking at teachers' self-efficacy as reported by samples are "I can find out and check whether a task has the appropriate level of difficulty (4.83)," "Even when skeptical colleagues comment on it, I am able to keep on putting my back into innovative projects (4.97)," and "I

can cope well with stress originating from innovative educational changes such as the Study-home (5.09).” Out of the three least important ranking are at teacher’s self-efficacy, two are “Self-efficacy towards Using Innovations”-related, and one is “Self-efficacy towards Using Tasks.”

TABLE I. RANKING OF TEACHERS’ SELF-EFFICACY

Ranking	Items	Mean	SD
Self-efficacy towards Guiding Groups			
9	If a pupil experiences difficulties in doing a task, I am able to help him or her on the right course.	5.20	1.10
2	I always assess well what is going on when a group works in a troublesome way.	5.70	1.06
6	I am able to foster co-operation in a group when the pupils experience difficulties in this.	5.52	1.07
1	When a group is disruptive I am able to get them back to work again quickly.	5.71	1.02
7	I can quickly set a pupil to work who is thwarting co-operation with others.	5.25	1.15
5	I am able to point out to the pupils that they are responsible for good academic achievements.	5.59	1.05
Self-efficacy towards Using Tasks			
10	If a pupil shows unmotivated behavior, I am able to find out the reason for it.	5.18	1.17
8	I am able to give the necessary clues to pupils they need in searching for relevant information for a task.	5.23	1.15
4	If pupils experience difficulties in carrying out a task, I can make them think about finding solutions themselves.	5.61	1.08
13	I can find out and check whether a task has the appropriate level of difficulty.	4.83	1.30
Self-efficacy towards Using Innovations			
3	In general I can cope quite well with stress that attends the implementation of educational innovations, as for example the Study-home.	5.69	1.26
11	I can cope well with stress originating from innovative educational changes such as the Study-home.	5.09	1.41
12	Even when skeptical colleagues comment on it, I am able to keep on putting my back into innovative projects.	4.97	1.40

N=546

B. On analysis of descriptive statistics of Innovative Work Behavior

Table 1 illustrates the ranking of Innovative Work Behavior. Among the top three most important ranking are “Acquiring approval for innovative ideas (5.59),” “Generating original solutions for problems (5.22),” and “Evaluating the utility of innovative ideas (5.06).” Among the top three are “Mobilizing support for innovative ideas (4.31),” “Making important organizational members enthusiastic for innovative ideas (4.75),” and “Introducing innovative ideas into the work environment in a systematic way (4.81).”

TABLE II. RANKING OF INNOVATIVE WORK BEHAVIOR

Ranking	Items	Mean	SD
Idea Generation			
6	Creating new ideas for difficult issues.	4.91	1.06
5	Searching out new working methods techniques or instruments.	4.96	1.14
2	Generating original solutions for problems.	5.22	1.11
Idea Promotion			
9	Mobilizing support for innovative ideas	4.31	1.24
1	Acquiring approval for innovative ideas.	5.59	1.06

Ranking	Items	Mean	SD
8	Making important organizational members enthusiastic for innovative ideas.	4.75	1.28
Idea Realization			
4	Transforming innovative ideas into useful applications.	4.99	1.16
7	Introducing innovative ideas into the work environment in a systematic way.	4.81	1.20
3	Evaluating the utility of innovative ideas.	5.06	1.16

N=546

C. The Relationship between Teachers’ Self-efficacy and Innovative Work Behavior

The Pearson’s correlation coefficients among the questionnaire scales are presented in Table 3. The relationships between the Teachers’ Self-efficacy and Innovative Work Behavior indicate that all of the variables are significantly positively correlated with each other ($r > .5$, $p < .01$), except that no statistical correlation is found between Self-efficacy towards Using Innovations and all scales. Self-efficacy towards Guiding Groups has significant and positive correlation with Self-efficacy towards Using Tasks ($r = .73$, $p < .01$), Idea Generation ($r = .57$, $p < .01$), Idea Promotion ($r = .54$, $p < .01$), and Idea Realization ($r = .56$, $p < .01$). Self-efficacy towards Using Tasks has significant and positive correlation with Idea Generation ($r = .60$, $p < .01$), Idea Promotion ($r = .58$, $p < .01$), and Idea Realization ($r = .65$, $p < .01$). Idea Generation has significant and strong correlation with Idea Promotion ($r = .59$, $p < .01$) and Idea Realization ($r = .72$, $p < .01$). Idea Promotion has significant and positive relationship with Idea Realization ($r = .68$, $p < .01$). Teachers with high a self-efficacy have shown better work innovative behavior. These variables indicate that many of the variables significantly correlated with each other but are all less than .73 (see Table 3). Unfortunately, the SE towards Using Innovations of TSE, there are no significant relationship with all scales of innovative work behavior.

D. Regression analysis

In Model 1, this study use Self-efficacy towards Guiding Groups, Self-efficacy towards Using Tasks, and Self-efficacy towards Using Innovations as three independent variables into the regression equation. The results reveal that these two variables are the significant predictors in explaining 63.1% on Idea Generation. In addition, the Model 2 reveals that three independent variables are the significant predictor in explaining 36.1% on Idea Promotion. Furthermore, Model 3 reveals that three independent variables are the significant predictor in explaining 43.8% on Idea Realization. These results imply that Self-efficacy towards Guiding Groups, Self-efficacy towards Using Tasks, and Self-efficacy towards Using Innovations are e significant predictor variables on Idea Generation, Idea Promotion, and Idea Realization respectively.

TABLE III. CORRELATION ANALYSIS BETWEEN TSE AND IWB

	M	SD	1	2	3	4	5
1. SE towards Guiding Groups	4.70	.74	—				

2. SE towards Using Tasks	2.99	.53	.73**	—					
3. SE towards Using Innovations	2.25	.51	.07	.05	—				
4. Idea Generation	2.16	.42	.57**	.60**	.06	—			
5. Idea Promotion	2.09	.41	.54**	.58**	-.01	.59**	—		
6. Idea Realization	2.12	.45	.56**	.65**	.08	.72**	.68**	—	

n=546, **p<.01

In the total score of teachers' self-efficacy, Model 1 indicates that teachers' self-efficacy is the significant predictor variables explaining 33.9% of variance on Idea Generation. Then, the result of Model 2 reveals that teachers' self-efficacy is a significant predictor, explaining 27.7% of variation on Idea Promotion. Furthermore, Model 3 shows that teachers' self-efficacy is a significant predictor in explaining 35.3% of variance on Idea Realization. These results reveal that teachers' self-efficacy is significant predictor variables on Idea Generation, Idea Promotion, and Idea Realization respectively (see Table 4).

TABLE IV. REGRESSION ANALYSIS OF THREE SUBSCALES AT TEACHERS' SELF-EFFICACY ON INNOVATIVE WORK BEHAVIOR

Independent Variable	Model 1 (Idea Generation)			Model 2 (Idea Promotion)			Model 3 (Idea Realization)		
	B	SE	β	B	SE	β	B	SE	β
SE towards Guiding Groups	.159	.028	.278**	.140	.028	.251**	.109	.028	.181**
SE towards Using Tasks	.317	.039	.398**	.307	.039	.394**	.435	.040	.518**
SE towards Using Innovations	.014	.028	.017	-.040	.028	-.049	.009	.028	.010
R ²	.631			.361			.438		
F	119.720**			102.094**			141.033**		
Teachers' Self-efficacy	.183	.011	.583**	.165	.011	.526**	.201	.012	.594**
R ²	.339			.277			.353		
F	279.547**			208.216**			296.551**		

n=546, **p<.01

V. DISCUSSION

The purpose of this study aims to investigate the influence of Teachers' Self-efficacy on Innovative Work Behavior. First, the result reveals that out of the three important ranking are at Teachers' self-efficacy, two are "Self-efficacy towards Guiding Groups"-related, and one is "Self-efficacy towards Using Innovations." The second domain of Teachers' Self-efficacy in this study is about guiding groups of pupils in a differentiating way. According to Meijnen [18], teacher might become the group manager, whose main focus is to associate well and efficiently with groups of pupils. However, the result indicates that out of the three most important ranking at Innovative Work Behavior, one was "Idea Generation"-related, one was "Idea Promotion"-related, and one was "Idea Realization"-related. Three domains of Teachers' Self-efficacy in this study were well-performance as well as Innovative Work Behavior.

The second result reveals that there is a significantly positively relationship between Teachers' Self-efficacy and Innovative Work, except that no statistical correlation is found between Self-efficacy towards Using Innovations and all scales. This result concurs with Gibbs [19], whose study indicate when teachers' self-efficacy was enhanced, and then

their persistence, resilience and willingness are expected to engage in innovative practices. Several studies indicate that the more strong positive self-efficacy, the students gain more academic achievement, increased their students' motivation and improvements to students' self-efficacy [20][21]. Therefore, teachers with high self-efficacy are found to be more innovative in teaching.

Furthermore, regression analyses reveal that the total score on Teachers' self-efficacy is a well-predictor on Innovative Work Behavior of three subscales relating to idea generation idea promotion, and idea realization. Teachers' self-efficacy has strong and positive influence on their work innovative behavior. However, this result also has demonstrated that better has teachers' self-efficacy towards Using Tasks is a better predictor among the participants. This result concurs with Allinder [22] whose study has found that teachers have strong self-efficacy beliefs are seen to have more prepared to experiment with, and later to implement new educational practices.

In addition, in model 1, Teacher Self-efficacy towards Guiding Group and Using Tasks are two important predictors to Idea Generation. This result reveals that through the group building and teamwork can enhance the idea generation. In model 2, Teacher Self-efficacy towards Guiding Group and Using Tasks are two important predictors to Idea Promotion. This result also indicates that teachers involved in their students in their tasks and discussion may promote more effective ideas. In model 3, Teacher Self-efficacy towards Guiding Group and Using Tasks are two important predictors to Idea Realization. This result shows that teachers want to implement the innovation, but they may not have the idea of realization. It doesn't matter, in the total score of TSE; it was shown that TSE is still an important predictor for teachers' IWB.

VI. CONCLUSION

This study has highlighted the importance of teachers' self-efficacy and innovative work behavior. This study has provided important insights into teachers' self-efficacy which could be utilized to raise teachers' innovative behavior at the workplace. Teachers with higher self-efficacy exhibit higher levels of innovative behavior at their workplaces. In order to increase the innovative work behavior for teachers, it is the best way to build teachers' self-efficacy. With regard to the directions for future researches, this study investigated the relationship of teachers' self-efficacy and innovative work behavior. According to the factors mentioned above, there are other factors that may influence their innovative behavior. Then, it is worth to explore them in the future.

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