

Effects of Self-Perceptions on Self-Learning among Teacher Education Students

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Abstract

This study evaluates the multivariate hypothesized model that predicts the significance of, and relationships among, various self-perception factors for being a qualified teacher and their direct and mediated effects on self-learning activities among teacher education students. A total of 248 teacher education students enrolled at an education university in Taiwan completed a study questionnaire in August and September 2014. Structural equation modeling was used to model the relationships among the following four latent variables: perceived teacher roles, self-concept, self-efficacy, and self-learning. The resulting model had an adequate fit to self-perceptions influencing self-learning activities among teacher education students. Teacher education students' self-efficacy plays a crucial role in facilitating self-learning.

Keywords: teacher education students, perceived teacher roles, self-concept, self-efficacy, self-learning

1. Introduction

Teacher education students should equip themselves with multiple abilities to become qualified as teachers. Although teacher education institutes provide numerous programs of study, teacher education students still need to actively self-learn. According to Cornford (2002), the most effective time for study is when a person gains knowledge of preferred approaches to learning that are consistent with personal judgments. Because personal judgments are influenced by personal perceptions, teacher education students' self-learning activities may also be influenced by their self-perceptions as qualified teachers.

Teachers have critical roles and responsibilities in education, including facilitating student learning and managing classrooms (Seymen, 2012). Teachers also influence moral values, the transmission of culture, and new social changes in youths. As a contribution to social development, teachers should foster student morality to suit the society (Stojiljković, Djigić, & Zlatković, 2012). Shim (2008) also suggested that teachers engage in self-cultivation by modeling a favorable character and promote liberation and humanization by developing a critical consciousness in their students. Thus, teachers play multiple roles. The perceived roles of teachers within their professional networks influence how much responsibility they accept at work. Hattingh and de Kock (2008) found that teacher education programs with a strong focus on the roles of teachers had challenged some of the traditional roles in which student teachers saw themselves and further changed their way of learning. Çakmak (2011) demonstrated that student teachers changed their thoughts when guided by teacher role perceptions. When enrolled in a teacher education program, teacher education students are often expected to exhibit the perceived role and responsibilities of an effective teacher. However, whether these perceptions facilitate their self-learning is unclear.

Moreover, teacher education students' perceived roles as teachers might be transferred into the images of a good teacher and induce themselves to match the images with self-concepts of a qualified teacher, to carefully choose the occupation, and to comment on their choices (Ben-Peretz, Mendelson, & Kron, 2003). A student's self-concept is often defined as the self-perception of performing well or poorly in school or in a particular domain, for example, a mathematics self-concept (E. Skaalvik & S. Skaalvik, 2013). A person's self-concept typically functions in a reciprocal relationship with learning situations; teacher education students derive elements of self-concept from their experiences in teacher education programs, and then use these experiences to create their self-concept of a qualified teacher. Furthermore, self-concept plays a crucial role in academic success (Prince & Nurius, 2014), and directs the behavior and activities of a person (McCrae & Costa, 1982; E. Skaalvik

& S. Skaalvik, 2013). Based on a self-concept relating to learning settings and individual behaviors, teacher education students' self-concept of being a qualified teacher might be influenced by their perceived roles as teachers, and further influences their self-learning actions in teacher education programs.

Self-learning actions are also influenced by self-efficacy. Bandura (1997) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy beliefs refer to people's beliefs about their capabilities to successfully execute a particular course of action. Van Dinther, Dochy, and Segers (2011) indicated that self-efficacy specifies tasks and activities in which people feel efficacious rather than a general self-judgment. Self-efficacy involves a specific level of self-confidence to accomplish a task. Wood and Bandura (1989) showed that the stronger a person's perceived self-efficacy is, the higher the goals he or she may set and the stronger his or her devotion would be to them. Zimmerman (2000) demonstrated that a student's self-efficacy plays a causal role in student development and the use of academic competencies. Yusuf (2011) also demonstrated the direct effects of self-efficacy on self-learning strategies and achievement motivation. Reasonably, the self-efficacy of teacher education students plays a crucial role in influencing their self-learning actions.

Self-concept and self-efficacy are distinguishable constructs (Jansen, Scherer, & Schroeders, 2015). Self-efficacy primarily refers to the self-judgment of context-specific abilities, whereas self-concept mainly depends on aggregated and global perceptions (Bandura, 1997; Bong & Skaalvik, 2003). Additionally, self-concept is a positive predictor for affective-motivational variables, whereas self-efficacy is a predictor for academic achievement or ability (Jansen et al., 2015). Ferla, Valcke, and Cai (2009) showed that students' self-concept strongly influences their self-efficacy.

Self-learning is a process in which people determine their own learning necessities, aims, and learning sources with or without the help of others (Knowles, 1975; Siminică & Traistaru, 2013). Self-learning is regarded as a valuable skill in educational and work environments (Oliveira & Simoes, 2006). Among teacher education students, self-learning is a process by which the students try to acquire systematized knowledge offered in teacher education programs. Students who possess a high readiness level for self-learning are conscious of their own responsibility in learning. Notably, studies have indicated no differences in self-learning strategies based on the gender of teacher education students (Çalışkan & Selçuk, 2010); however, according to the studies by Mohamoud-Mahfouz and Hassan-Ma'Ajini (2013) and Mok, Ma, Yuk, Liu, and So (2005), female students reported a relatively higher level of strategy awareness than male students did. Accordingly, the effect of gender on self-learning actions must be eliminated in this study.

In sum, teacher education students' perceptions of teacher roles, self-concept, and self-efficacy may influence their self-learning actions. In addition, perceived teacher roles influence self-concept, and self-concept influences self-efficacy. The relationship model between various teacher education students' self-perceptions and their self-learning activities is depicted in Figure 1. This study evaluates a multivariate model that predicts the significance of, and relationships among, various self-perception factors for being a qualified teacher and their direct and mediated effects on self-learning activities among teacher education students.

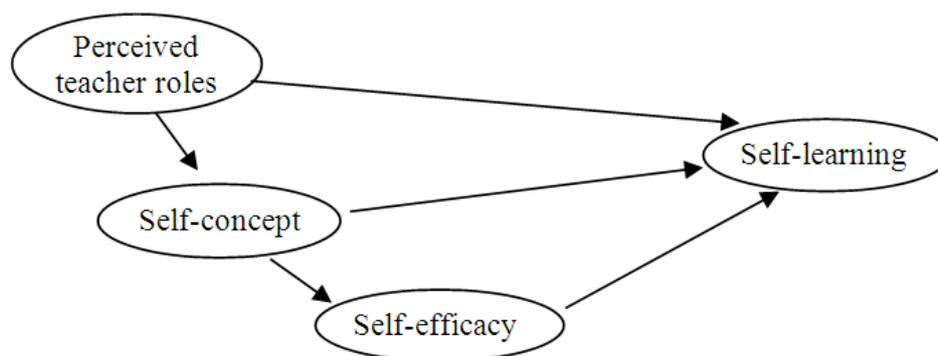


Figure 1. Path diagram of the SEM model

2. Methodology

2.1 Research Design

Structural equation modeling (SEM) was used to model the relationships among the following four latent variables: perceived teacher roles (PTR), self-concept (SC), self-efficacy (SE), and self-learning (SL). A survey was conducted to collect data. The SEM model includes measurement and path models. The measurement model is a conventional confirmatory factor model used to assess data validity, whereas the path model consists of the direct, mediated, and total effects of one latent variable on another. The sum of the direct and mediated effects is the total effect (Bollen, 1989).

2.2 Research Participants

The sample comprised 248 students enrolled in a teacher education program at a university of education in Taiwan. The participants completed the study questionnaire in August and September 2014. The sample comprised 78 male (31.5%) and 170 female (68.5%) students.

2.3 Instrument

A questionnaire was developed to identify the factors relating to teacher education students' self-perceptions. Four sections associated with four variables were included in the questionnaire. Table 1 shows the individual items that were developed on the basis of literature.

The first section, PTR, includes three items: the role of transmitting knowledge, of modeling good character, and of promoting liberation and humanization (Shim 2008). This section measures the teacher education students' perceived roles as teachers. The second section, SC, includes four personal characteristics of an effective teacher: enthusiastic, energetic, passionate, and motivating (Fajet, Bello, Leftwich, Mesler, & Shaver, 2005). Fajet et al. (2005) suggested that teacher education students consider teaching primarily as a task involving affective, interpersonal relationships rather than a profession requiring a skilled and knowledgeable practitioner. The third section, SE, has five items: pedagogy, students, curriculum, parents, and environment. According to Betz and Hackett (1981), self-efficacy identifies how students perceive their own ability to perform vocationally relevant tasks in an educational setting. Additionally, self-efficacy refers to specific tasks and activities in which people feel effective. The final section, SL, includes four general education working fields: subject content knowledge, pedagogy knowledge, educational setting knowledge, and critical thinking knowledge (Knowles, 1975; Oliveira & Simoes, 2006).

Responses to each item were scored on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). All items were repeatedly revised by five professors with relevant expertise. Cronbach's alpha was initially calculated to assess the internal consistency and reliability of the four variables. The alpha value for the total questionnaire was 0.901; the alpha values for PTR, SC, SE, and SL were 0.765, 0.934, 0.889, and 0.800, respectively.

2.4 Data Analysis

After data collection, we evaluated the homogeneity in gender and confirmed multivariate normality and validity by using factor loadings for the measurement model. We then assessed the entire model and model fit.

2.4.1 Evaluation of Homogeneity in Gender

An independent-samples *t* test was applied to determine whether the four latent variables differed on the basis of the gender of the teacher education students. The results revealed insignificant differences (PTR: $t = -0.553$, $p > .05$; SC: $t = -1.970$, $p > .05$; SE: $t = -1.040$, $p > .05$; and SL: $t = 1.139$, $p > .05$), eliminating the potential effect of gender on the variables.

2.4.2 Assessment of Multivariate Normality

The SEM programs involved performing maximum likelihood estimation. According to Bollen and Long (1993), univariate normality is achieved when both skewness and kurtosis coefficients have absolute values less than 2.0. We generated coefficients from -0.914 to 0.089 for skewness and from -0.805 to 0.612 for kurtosis (Table 1). The data did not violate the univariate normality assumption associated with the maximum likelihood estimation for each observed variable. According to Bollen (1989), multivariate normality exists when Mardia's coefficient is less than $p(p+2)$, where p is the number of observed variables. In this study, Mardia's coefficient was 52.467, and $p = 16$; $52.467 < 16 \times (16 + 2) = 288$. Thus, multivariate normality exists.

2.4.3 Validity

To assess construct validity, the standardized regression loading of each observed variable was calculated. Additionally, discriminant validity was determined by comparing the average variance extracted (AVE) with the correlation coefficients among the latent variables.

Table 2 shows the standardized factor loading for each observed variable. The factor loadings were 0.60–0.92 (t values = 8.24–21.29, $p < .05$), exceeding the recommended minimum of 0.50 (Hair, Anderson, Tatham, & Black, 1998). Additionally, the construct validity of each latent variable was 0.709–0.885 (Table 2); according to Bagozzi and Yi (1998), measurement instruments have construct validity when the construct validity of latent variables exceeds 0.60.

Moreover, the AVE of each latent factor (0.501–0.767) exceeded 0.5, and all square roots of AVE for the four factors (0.708–0.876) exceeded the correlation coefficients among latent variables, demonstrating favorable discriminant validity (Anderson & Gerbing, 1988).

Table 1. Descriptive statistics and assessment of normality

observed variables	items	Mean	SD	skew	kurtosis
Perceived Teacher roles	transmitting knowledge	4.11	.859	-.864	.612
	modeling good character	4.15	.859	-.914	.479
	promoting liberation and humanization	4.31	.793	-.913	.065
Self-concept	enthusiastic	3.92	.873	-.392	-.443
	energetic	4.06	.832	-.586	-.071
	passionate	3.91	.931	-.517	-.459
	motivating	4.02	.946	-.673	-.236
Self-efficacy	about pedagogy	3.80	.912	-.307	-.593
	about students	3.79	.816	-.279	-.195
	about curriculum	3.81	.840	-.331	-.246
	about parents	3.68	.804	-.204	-.168
	about environment	3.68	.809	-.232	-.166
Self-learning	on subject content knowledge	3.38	.991	-.163	-.453
	on pedagogy knowledge	3.34	1.134	-.173	-.805
	on educational setting knowledge	3.13	1.007	.089	-.582
	on critical thinking knowledge	3.18	1.028	-.009	-.627
Mardia's coefficient		52.467		17.214	

2.4.4 Evaluation of the Entire Model

Notably, SEM determines the significance of variables in the entire model. In this study, the estimated result had a high significance level ($\chi^2 = 148.394$, $df = 97$, $p < .01$). According to Kline (2005), the suggested value for χ^2/df is less than 3 for large samples. For this model, the value was adequate because $\chi^2/df = 148.394/97 = 1.530$. In addition, according to suggested guidelines from Bollen (1989), Kline (2005), and Pedhazur (1997), all other values related to model fit indices were adequate for SEM; that is, the research model had a favorable fit. Table 3 lists the model fit results.

Table 2. Construct and discriminant validity

Latent variables	Observed variables	Loading	Construct	AVE	\sqrt{AVE}
PTR	transmitting knowledge	.65	0.773	0.536	0.732
	modeling good character	.85			
	promoting liberation and humanization	.68			
SC	Enthusiastic	.91	0.885	0.767	0.876
	Energetic	.92			
	passionate	.85			
	motivating	.82			
SE	about pedagogy	.76	0.748	0.621	0.788
	about students	.81			
	about curriculum	.80			
	about parents	.79			
SL	about environment	.78	0.709	0.501	0.708
	on subject content knowledge	.82			
	on pedagogy knowledge	.68			
	on educational setting knowledge	.71			
	on critical thinking knowledge	.60			
correlation coefficients among the factors					
0.245** for PTR-SC,		0.170** for PTR-SE,		0.098 for PTR-SL,	
0.759** for SC-SE,		0.532** for SC-SL,		0.579** for SE-SL	

* $p < .01$.

Table 3. Results of model fit indices for the model

Model fit indices	Values	Suggested guidelines
χ^2/df	1.530	< 3
CFI	.978	$\geq .9$
GFI	.935	$\geq .9$
AGFI	.909	$\geq .9$
NFI	.940	$\geq .9$
IFI	.979	$\geq .9$
RMR	.035	< .05
RMSEA	.046	< .05

2.4.5 Path Analysis

Figure 2 shows the path coefficients among latent variables. Three of the five path estimates reached significance; the rest were insignificant. According to Cohen's recommendation, interpretations of effect size are based on standardized path coefficients with absolute values: small effect (≤ 0.1), medium effect ($> 0.1, < 0.5$), and large effect (≥ 0.5) (Kline, 2005). The total effects, direct effects, and indirect effects among the five latent variables were calculated.

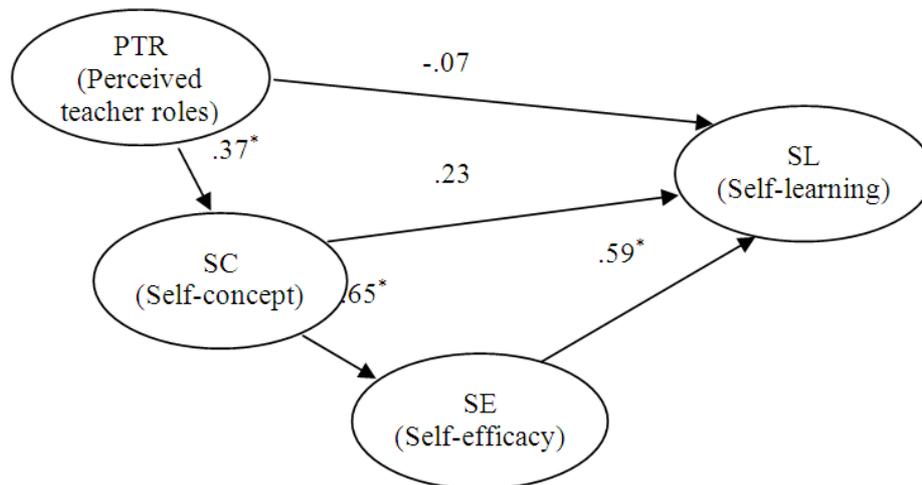


Figure 2. Path coefficients of the SEM model ($p < .05$)

The direct effect of PTR on SL was insignificant at -0.07 ; the coefficient of indirect effect, mediated by SC and SE, was 0.14 ($0.37 \times 0.65 \times 0.59$), tending to a small-medium effect. The direct effect of SC on SL was also insignificant at 0.23 , whereas the coefficient of indirect effect, mediated by SE, was moderate at 0.38 (0.65×0.59). The effect of SE on SL reached the significance of 0.59 , revealing a large effect.

3. Conclusions and Discussion

The resulting model had an adequate fit to self-perceptions of being a qualified teacher influencing self-learning activities among teacher education students. The analytical results of this study revealed that both perceived teacher roles and the self-concept of teacher education students have no direct influence on self-learning activities; instead, they have indirect effects on self-learning, moderated by self-efficacy. Additionally, the self-efficacy of teacher education students' has a direct and significant influence on self-learning activities with a large statistical effect. Even with a high level of teacher role perception and self-concept, the self-learning activities of teacher education students cannot be directly enhanced except through the moderating effects of their self-efficacy. Self-efficacy plays a crucial role in facilitating self-learning activities.

Teachers' perceived roles within their professional fields may influence their thoughts on education and change their way of learning (Çakmak, 2011; Hattingh & de Kock, 2008). The results of this study revealed that teacher education students' perceived teacher roles influence their self-concept, confirming previous literature. However, the results also showed that role perceptions have no significant effects on self-learning activities, which is inconsistent with literature. As mentioned, self-learning activities involve experiences related to educational environments (Oliveira & Simoes, 2006). Lacking actual school experience, teacher education students are unable to determine their own learning necessities, aims, and learning sources, as described by Knowles (1975). Hence, teacher education students cannot transfer perceived teacher roles into actual educational activities, resulting in the difficulty of setting specific learning tasks. They do, however, acquire images of teacher roles to shape their self-concept as teachers. Thus, it is reasonable that self-concept, maybe only an image reflecting on specific roles, did not directly influence self-learning activities.

Self-concept is a mental image or perception of performing well or poorly in specific tasks. Self-efficacy involves the self-confidence to accomplish a task. When teacher education students' self-concept is an individual perception of themselves (for example, "I am a person who can learn with enthusiasm and energy"), their learning motivation increases. These students subsequently strengthen their resilience and self-confidence, and further create high self-efficacy. This explains why the self-concept of teacher education students influences their self-efficacy.

Another finding showed that self-learning actions are influenced by self-efficacy. Self-efficacy typically involves a person's beliefs about his or her capabilities to successfully implement a specific action. In other words, teacher education students with a high level of self-efficacy may be highly confident in learning, resulting in a high level of self-learning beliefs and a strong engagement in learning tasks. This explains why self-efficacy influences self-learning activities among teacher education students.

Notably, a study by Prince and Nurius (2014) indicated that when self-concept has an influence on learning success, this might be caused by a moderated factor (i.e., self-efficacy).

4. Implications and Limitations

In this study, the SEM regarding the effects of self-perceptions on self-learning among teacher education students was verified. This research model can thus serve as a base model for future studies. Education programs can positively shape teacher education students by providing favorable teacher role models, by assisting students to develop a high level of self-concept as teachers, and by facilitating them to actively learn to achieve teacher qualifications. However, our findings showed that enhancing students' self-efficacy cannot be ignored because of its significant effects on self-learning regardless of direct or mediated effects. Teacher education institutes should therefore design programs to develop self-efficacy to facilitate self-learning among teacher education students. Future research could examine the relationships between the development of self-efficacy and the process of self-learning in teacher education programs.

This study focused on teacher education students' self-perception and its relationship with self-learning. According to some studies, self-learning is also associated with individual learning styles. Thus, one limitation of this study is that the results may differ because of different learning styles among the participants, which were not examined in this study.

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