

Contributing Factors to Beginning Teacher Instruction Self-Efficacy

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Abstract

This study examined how preparation in subject content, preparation in subject pedagogy, student behaviors and teacher collaboration contributed to teacher self-efficacy in instruction. Full-time teachers with no more than 5 years of teaching experience who participated in the 2013 teaching and learning international survey (TALIS), were selected in the data analyses. The results show that there is a significant correlation between preparation in the subject pedagogy and preparation in the subject content, and a significant correlation between preparation in the subject pedagogy and student behaviors. Preparation in the subject content, preparation in the subject pedagogy, student behaviors and teacher collaboration each contributes unique variance to teacher instruction self-efficacy. Implications for teacher education and curriculum are discussed.

Keywords: self-efficacy, beginning teachers, knowledge, student behaviors, collaboration

Objective and Purpose

The purpose of this study is to examine factors influencing beginning teacher self-efficacy in instruction to inform curriculum and supports for beginning teachers. Specifically, the four influencing factors this study considers are preparation in the subject content, preparation in the subject pedagogy, student behaviors and teacher collaboration.

First, teacher effective functioning is essential for student learning (Sanders & Rivers, 1996). An essential part of teacher effective functioning is teacher self-efficacy (Bandura, 1986, Tscheanne-Moran & Hoy, 2001). Bandura (1986) defines self-efficacy as “people’s judgements of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). Following Bandura (1986), teacher self-efficacy refers to “the judgement of teachers’ capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (Tschannen-Moran & Hoy, 2001, p. 783).

According to the Association of Teacher Educators Standards for Teacher Educators, teachers need to be able to teach students from various background and use innovative techniques to facilitate teaching. Teacher self-efficacy should be an important educational outcome for teacher education programs. Teachers with a high-level of self-efficacy are more likely to think that they can teach various students effectively (Tschannen-Moran & Hoy, 2001), and are more likely to use various innovative teaching strategies (Guskey, 1988; Nie, Tan, Liao, Lau, & Chua, 2012; Thurlings, Evers, &

Vermeulen, 2015), and to show higher teaching quality (Groschner, Schindler, Holzberger, Alles, & Seidel, 2018), and produce better student learning outcomes (Bruce, Esmonde, Ross, Dookie & Beatty, 2010; Friedma & Kass, 2002; Ross, 1992). Furthermore, teachers with higher teacher self-efficacy experience more teacher performance satisfaction (Collie, Shapka, & Perry, 2012; Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2010) and teacher well-being (Zee & Koomen, 2016). Teacher self-efficacy also contributes to teacher commitment (Skaalvik & Skaalvik, 2010; Tschannen-Moran & Hoy, 2001). Teacher self-efficacy influences a range of different teaching and teacher variables (Erdem & Demirel, 2007).

Beginning teacher self-efficacy requires special attention as beginning teachers within 5 years of teaching are more likely to leave the profession (Smith, & Ingersoll, 2004; Stockard, & Lehman, 2004). Beginning teachers have the higher risk of emotional distress and self-doubt, which leads to the intention to leave the teaching profession (Lanas, 2017; Zimmerman, 2016). The attrition rate among teachers is growing rapidly especially among educators in the early stages of their careers (Borman & Dowling, 2008).

Secondly, according to the Association of Teacher Educators Standards for Teacher Education, pre-service teacher education programs play an important role for preparing teachers for high quality teaching (Darling-Hammond, Holtzman, Gatlin, & Vasquez-Heilig, 2005) by modeling teacher professional knowledge. To prepare pre-service teachers for high quality teaching, teacher education programs should develop innovative courses to prepare pre-service teachers for subject content and pedagogy, the two major components of teacher competence (Ball, Thames & Phelps 2008; Shulman, 1986). This leads to the question how the preparation for subject content and for subject pedagogy contributes to teacher self-efficacy.

Beginning teachers' self-efficacy may also be influenced by students' behaviors and colleague collaboration as beginning teachers tend to be overwhelmingly frustrated by student behaviors (Zimmerman, 2016) and the need for colleague collaboration (Lanas, 2017). Teaching is dynamic and interactional (Zimmerman, 2015, 2017), and student behaviors, such as making noise or interrupting, may affect strongly beginning teachers' instruction self-efficacy. Colleague collaborations, such as joining in teaching, observation of colleague teaching and giving feedback, participating in teacher discussions (Tichenor & Tichenor, 2019), may help beginning teachers deal with multiple interactions in classrooms, and have positive influence on beginning teachers' self-efficacy in instruction.

Thirdly, there may be correlations between the variables, preparation in the subject content, preparation in the subject pedagogy, students' behaviors, and teachers' collaboration for beginning teachers. Student behaviors are influenced by teacher behaviors (Yildiz, 2015) and pedagogy (Hollo & Hirn, 2014). Students' behaviors and teachers' behaviors influence each other (Nelson & Robert, 2000). Teachers collaborate in professional knowledge and dealing with student behaviors (Ostovar-Nameghi &

Sheikhmadi, 2016). When there are more teacher collaborations, there may be better preparations in the subject content and pedagogy and better student behaviors.

This study intends to examine the following two research questions:

1. Are the following variables (preparation in subject content, preparation in subject pedagogy, student behavior, and colleague collaboration) correlated?
2. Does each of the following variables (preparation in subject content, preparation in subject pedagogy, student behaviors and colleague collaboration) have a unique contribution to teacher instruction self-efficacy?

Literature Review

Research related to the first research question, how preparation of the subject content, the preparation of the subject pedagogy, student behaviors and teacher collaboration are related, is virtually non-existent. While there has been much research in teacher knowledge of the content and pedagogy (Kleickmann, Richter, Kunter, Elsner, Besser, Krauss, & Baumert, 2013), student behaviors (e.g., Guner, 2015), teacher collaboration (e.g., Ostovar-Nameghi, & Sheikahmadi, 2016) respectively, little research examined how the preparation in the subject content, the preparation in the subject pedagogy, student behaviors and teacher collaboration are related for the beginning teachers.

There has been little research related to the second research question, how preparation in the subject content, preparation in the subject pedagogy, student behaviors and teacher collaboration contribute to beginning teacher self-efficacy instruction. One work of dissertation research (Fox, 2014) examined the relationship of teacher knowledge of the subject content and teacher self-efficacy and found that there was no relationship of teacher knowledge of the subject content and the teacher self-efficacy. Palmer (2006) showed that subject content knowledge and subject pedagogy knowledge contributed to teacher self-efficacy. Studies found that teacher self-efficacy was also influenced by the teacher collaboration (e.g., Chong & Kong, 2015) and student positive behaviors (e.g., Collies, Shapka, & Perry, 2012; Kelm & McIntosh, 2012). While the research contributed to the understanding of factors influencing teacher self-efficacy, the research did not address specifically how the four variables (the preparation in subject content, the preparation in subject pedagogy, student behaviors and teacher collaboration) contribute to the self-efficacy in instruction of beginning teachers.

Methods

The data of this study is the American sample from the Teaching and Learning International Survey (TALIS) 2013 data by the Organization for Economic Cooperation and Development (OECD, 2016). The full-time teachers with no more than 5 years of teaching are selected for this study as teaching experience of no more than 5 years are categorized as beginning (Klassen & Chiu, 2010). The selection of data resulted in the

total participants 834, who were full time teachers with no more than 5 years of teaching experience. There are 536 (64.3%) female teachers and 298 (36.7%) male teachers.

Dependent Variable

Self-efficacy in instruction refers to the perceived competence in using instructional strategies to improve student learning (Tschannen-Moran & Wookfolk Hoy, 2001). The survey items selected form TALIS data for assessing instruction self-efficacy are shown in Table 1. The items are based on the Likert scale with 4 points with higher scores indicating stronger in the self-efficacy. The scores of the self-efficacy are the average of the scores of the three items, TT2G34C, TT2G34K and TT2G34L assessing to what extent the teacher can use the instructional strategies.

Table 1

TALIS Items for Assessing Self-efficacy

Dependent Variable	Items	Scale
Teacher Self-efficacy in Instruction	In your teaching, to what extent can you do the following? TT2G34C, Craft good questions for my students TT2G34K, Provide an alternative explanation for example when students are confused. TT2G34L, Implement alternative instructional strategies in my classroom	1. Not at all 2. To some extent 3. Quite a bit 4. A lot

Independent Variables

The items from TALIS data to assess the four independent variables, preparation in the subject content, preparation in the subject pedagogy, student behaviors and teacher collaboration are shown in Table 2. Preparation in subject content is assessed using one item, TT2G13A, which assesses to what extent the teacher feels prepared in the subject content using 4 points Likert scale. Scores of preparations in the subject content are the scores on the one item. Higher scores indicate better preparation. Teacher preparation in the subject pedagogy is assessed using one item, TT2G13B, which assesses to what extent the teacher feels prepared in the subject pedagogy using 4 points Likert scale.

Scores of the preparation in the subject pedagogy are the scores on the one item. Higher scores indicate better preparation in the subject pedagogy. The variable of student behaviors is assessed with the following four items, TT2G41A, TT2G41B, TT2G41C, and TT2G41D, which assess teacher perception of student behaviors in classrooms using 4 points Likert scale. Items TT2G41A, TT2G41C, and TT2G41D, were reverse scored so that higher scores indicate better behaviors. The scores for student behaviors are the average of the scores of the four items. The variable, teacher collaboration, is assessed with the following three items, TT2G33A, TT2G33B and TT2G33E, which assess the frequency of teacher collaboration in teaching, giving feedback and discussions using the 6 points Likert Scale. Higher scores indicate more frequency in the collaboration. The scores of the variable, collaboration, are the average of the scores of the three items.

Table 2

TALIS Items for Assessing Dependent Variables

Independent Variable	Items	Scale
Preparation in the Subject Content	In your teaching, to what extent you feel prepared TT2G13A,	1. Not at all 2. Somewhat 3. Well 4. Very Well
Preparation in the Subject Pedagogy	Content of the Subject(s) I teach TT2G13B, Pedagogy of the Subject(s) I teach	
Student Behaviors	How strongly do you agree or disagree with the following statements? TT2G41A When the lesson begins, I have to wait quite a long time for students to quiet down. TT2G41B Students in this class take care to create a pleasant learning atmosphere. TT2G41C I lose quite a lot of time because of students interrupting the lesson. TT2G41D There is much disruptive noise in this classroom	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
Teacher Collaboration	On average, how often do you do the following? TT2G33A Teach jointly as a team in the same class TT2G33B Observe other teachers' classes and provide feedback TT2G33E Engage in discussions about the learning development of specific students.	1. Never 2. Once a year or less 3. 2-4 times a year 4. 5-10 times a year 5. 1-3 times a month 6. Once a week or more

Data Analyses and Results

Missing data for most the variables is below 5%. Listwise deletion of missing data (Mertler & Reinhart, 2017) resulted in a sample size of 601. The tolerance was .71 for preparation in the subject content, .69 for preparation in subject pedagogy, .98 for student behaviors and .99 for teacher collaboration, and VIF was 1.42 for preparation in the subject content, 1.44 for preparation in subject pedagogy, 1.02 for student behavior, and 1.01 for teacher collaboration, suggesting that multicollinearity does not exist for the set of predictors. Univariate normality and multivariate normality assumptions were met. Cronbach alpha (Cronbach, 1951) is .87 for 4 items assessing student behaviors and .50 for the 3 items assessing collaboration, the low internal consistency of which could be due to the small number of items for assessing the construct (Loewenthal, 2001).

Table 3

Descriptive Statistics for the Variables

Variables	Mean	Standard Deviation	Skewness	Kurtosis
Self-efficacy	3.35	.53	-.43	-.62
Preparation in Subject Content	3.62	.60	-1.39	1.02
Preparation in Subject Pedagogy	3.41	.66	-.79	-.03
Student Behaviors	2.76	.69	-.46	-.08
Teacher Collaboration	3.21	1.17	.48	-.30

To address first research question, correlation analysis was conducted, which showed that preparation in subject content and preparation in subject pedagogy were significantly related, $r = .58, p < .01$. Student behavior was not related to preparation in subject content, $r = .05, p > .05$. Student behavior was related to preparation of subject pedagogy, $r = .12, p < .01$. Teacher collaboration was not related with preparation in subject content, $r = -.04, p > .05$, preparation in subject pedagogy, $r = .042, p > .05$, and student behaviors, $r = .026, p > .05$ (see Table 4).

Table 4

Correlations of the Preparation of the Subject Content, Preparation of the Subject Pedagogy, Student Behaviors and Teacher Collaboration

	Preparation in Subject Content	Preparation in Subject Pedagogy	Student Behavior
Preparation in Subject Content			
Preparation in Subject Pedagogy	.58**		
Student Behaviors	.05	.12**	
Teacher Collaboration	-.05	.04	.03

Notes: ** $p < .01$.

To address the second research question, hierarchical regression analyses were conducted, with teacher self-efficacy in instruction being independent variable, and the preparation in the subject content, the preparation in the subject pedagogy, student behaviors, and teacher collaboration as independent variables. As shown in Table 5, at step 1, the knowledge of the content was entered, which explained 5% of the outcome variance, $R^2 = .05$, $F(1, 599) = 31.31$, $p < .001$. At step 2, the knowledge of the pedagogy was added, which explained additional 4% of the outcome variance, $\Delta R^2 = .04$, $F(1, 598) = 22.67$, $p < .001$. At the 3rd step, the variable of student behaviors was added, which explained additional 2% of the outcome variance, $\Delta R^2 = .02$, $F(1, 597) = 16.33$, $p < .001$. At step 4, the variable of teacher collaboration was added, which explained additional 1% to the outcome variance of self-efficacy, $\Delta R^2 = .01$, $F(1, 596) = 7.92$, $p < .01$. Each of the variables has unique contribution to the teacher self-efficacy in instruction. The set of the 4 variables explained 12% of the outcome variance, the medium effect size (Cohen, 1988). Among the four variables, preparation in subject pedagogy had the strongest effect ($\beta = .19$) followed by student behaviors ($\beta = .16$), followed by teacher collaboration ($\beta = .11$) and preparation in subject content ($\beta = .11$).

Table 5

Hierarchical Multiple Regression Analysis Predicting Teacher Self-Efficacy

	Independent Variables	Teacher Self-Efficacy				
		ΔR^2	b	β	t	p
Step 1	Preparation of the Subject Content	.05	.11	.11	2.41	<.05
Step 2	Preparation of the Subject Pedagogy	.04	.16	.19	4.15	<.001
Step 3	Student Behaviors	.02	.12	.16	3.10	<.001
Step 4	Teacher Collaboration	.01	.05	.11	2.82	<.01
	Total R^2	.12				

Discussions and Scholarly Significance

This study examined factors that contributed to beginning teacher self-efficacy in instruction, which is an important teacher education outcome, according to the Association of Teacher Educators Standards for Teacher Educators. Beginning teachers have more recent preparation in subject content and subject pedagogy, but they are less experienced (Tschannen-Moran & Hoy, 2007) in student behaviors and teacher collaboration. The study contributes to the understanding of beginning teachers' instruction self-efficacy and have significant implications for beginning teacher preparation and supports.

As shown in the result section, there is a strong correlation of preparation in subject content and preparation in subject pedagogy, which is consistent with the literature (e.g., Parker & Heywood, 2000), suggesting there may be some overlapping in the preparation of subject content and subject pedagogy. Preparation in the subject pedagogy is related to student behaviors, supporting that teacher pedagogy is helpful for beginning teachers to deal with student behaviors (Hollo & Hirn, 2014). However, to help beginning teachers with student behaviors, other interventions are needed as the correlation between preparation in the subject pedagogy and student behaviors is low. Teacher collaboration is not correlated with preparation in the subject content, preparation in subject pedagogy, and student behaviors respectively, suggesting that teachers' collaboration, and the following three variables, preparation in the subject content, preparation in the subject pedagogy and student behaviors, may not influence each other respectively for beginning teachers.

The findings indicated that the model including preparation in subject content, preparation in subject pedagogy, student behaviors and colleague collaboration has medium effect size for explaining beginning teacher self-efficacy in instruction. Each of the following variables (preparation in subject content, preparation in subject pedagogy, student behaviors and colleague collaboration) contributed uniquely to the beginning teachers' self-efficacy. Among the 4 factors, preparation in the subject pedagogy had the strongest effect, followed by the student behaviors. For beginning teachers to be developed in self-efficacy in instruction, beginning teachers need to be prepared for subject pedagogy. Beginning teachers also need to be supported in dealing with student behaviors and collaborating with other teachers.

The findings lead to the question how teacher curriculum can be seen as beginning teacher self-efficacy construction, which involves preparation in subject content and pedagogy, student behaviors, teacher collaboration. This question is legitimate considering that preparations in professional knowledge, student behaviors and teacher collaboration cannot replace one another. A teacher curriculum driven by preparing for professional knowledge alone may not fully match the need for dealing with the challenges for beginning teachers in teaching. Teacher curriculum should aim at strengthening professional knowledge, and practices, which contribute to beginning teacher self-efficacy and, while preparations in professional knowledge are necessary, it

is also necessary to connect the preparations of the professional knowledge with the practices of dealing with student behaviors and teacher collaborations.

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