

18-19 OGOS 2015

Anjuran:

Institut Pendidikan Guru Kampus Pendidikan Islam http://ncal2015.weebly.com/

A MEASUREMENT MODEL OF TEACHERS' SENSE OF EFFICACY IN TEACHING ARABIC

Mohamad Azrien Mohamed Adnan Academy of Islamic Studies, University of Malaya <u>mdazrien@um.edu.my</u>

Assoc Prof Dr Arifin Mamat Assoc Prof Dr Ismaiel Hassanein Ahmed Mohamed Assistant Prof Dr Mohd Burhan Ibrahim Tajulashikin Jumahat

Kulliyyah of Education, International Islamic University Malaysia

ABSTRACT

Teachers' sense of efficacy is an essential construct in teaching and learning. Researchers in education have recognized that teacher efficacy has strong relationship with various aspects of teaching and learning. This study aims at 1) examining the construct of teachers' sense of efficacy and 2) evaluating the adequacy of the teachers' sense of efficacy measure across teachers' gender. In so doing, this study attempt to develop the extent to which the conceptualized teachers' sense of efficacy measure reproduces the data. The data were collected from adopted version of Teachers' Sense of Efficacy Scale (TSES) by Tschannen-Moran and Woolfolk Hoy (2001) administered to 236 teachers of National Religious Secondary School in Malaysia. The results of confirmatory factor analysis supported the adequacy of teacher's sense of efficacy measure and found that teacher's sense of efficacy is a multidimensional construct with four underlying dimensions namely efficacy for language use, efficacy for classroom management, efficacy for teaching strategies and efficacy for student engagement. The measurement model also found to be applicable across gender.

INTRODUCTION

Self-efficacy belief was introduced by Bandura (1977) as individual's confidences about his or her capabilities to achieve desired levels of performance in a specified effort. Self-efficacy ascertain how people act, imagine, feel, think, and inspire themselves. The definition of self-efficacy will become more obvious if it might establish the individual's earnestness to design, develop strategies and carry out his/her duties effectively. The ability of human beings to impact their environment is strongly related to belief in their ability to bring about change. Bandura (1995) states, "People's level of motivation, affective states, and actions are based more on what they believe than on what is objectively the case" (p. 2). An individual with a high degree of self-efficacy is capable to design and achieve tasks and make a success as a goal to be achieved. A teacher's sense of efficacy may influence their emotive state, their goal setting and their persistence (Ashton and Webb, 1986) since the complex nature of teaching requires that an individual feel a personal power that transcends methodology.

The roots of the teacher efficacy construct were born nearly 35 years ago by RAND researchers (Armor et al., 1976) where sense of self-efficacy was reported to be "positively related to student achievement" (Ashton and Webb, 1986; Ross, 1992). Teachers with high levels of self-efficacy have a strong academic and people orientation (Dembo and Gibson, 1985). Teachers with a high sense of efficacy feel a personal accomplishment, have high expectations for students, feel responsibility for students' learning, have strategies for achieving objectives, a positive attitude about teaching and believe they can influence student learning (Ashton, 1984). Teachers who perceive themselves efficacious will spend more time on student learning, support students in their goals and reinforce intrinsic motivation (Bandura, 1993).

Teacher efficacy researches have been widely examined by many researchers in various context and subject areas. For instant, it has been explored in the science education field (Bleicher, 2004; McKinnon, Moussa-Inaty, and Barza, 2014; van Aalderen-Smeets, Walma van der Molen, and Asma, 2012), mathematics (Tran et al., 2012), physical education (Ozkan, Dalli, Bingol, Metin, and Yarali, 2014) and teaching English to speakers of other languages (TESOL) (Chacón, 2005; Lee, 2009). However, in the field of Teaching Arabic as a Foreign Language (TAFL), investigation on teacher efficacy is extremely scarce. Therefore, it is crucial to pursue this line of investigation. Thus, this study aims at examining if the measurement model of teacher efficacy is valid and reliable.

CONCEPTUALIZING TEACHER EFFICACY

Teacher efficacy has appeared as an influential construct in the literature. Tschannen-Moran and Woolfolk Hoy (2001) developed a new measure of teacher self-efficacy, labelled three factors: efficacy for student engagement, efficacy for instructional strategies and efficacy for classroom management. This study

adapts the TSES and add one more construct namely efficacy for language use in order to include teaching tasks particularly emphasized in the Malaysian Religious National Secondary School Arabic language teaching context.

Efficacy for Classroom Management

Classroom management is a broad umbrella term describing a teacher's efforts to oversee classroom activities such as learning, social interaction and student behaviour (Martin, Yin, and Baldwin, 1998). It has become increasingly important over the past few decades. The main reason is that with good classroom behaviour, effective teaching and learning cannot and will not take place (Marzano, Marzano, and Pickering, 2003). Teachers have recently been put under extreme pressure for their students to perform. Increased accountability and high stakes testing require students to meet a desired level of academic success, and without a properly managed classroom, this task is near impossible.

Teaching Arabic to non-native Arabic speakers is even more challenging and it demands teachers to have excellent classroom management skills to ascertain a successful learning process. Teacher ability in making the learning process more enjoyable is an essential skill in classroom management (Hines, 2015). In other word, teachers should be capable to implement various teaching techniques and activities that will support students' interest especially concerning an unknown or unfamiliar language. They also should have creativity in employing different teaching resources to allow the students to have "auditory, visual, kinaesthetic and tactile skills" (Vernon, 2015) in which they can recognise using the Arabic language. The use of auditory aids such as voice recording among Arabic language learners can help them in evaluating and practicing phonation, pronunciation and diacritical mark, while visual aids such as posters may be used in practicing how to give explanations. Teachers actually should enjoy the works; alternatively it will reflect on the process of teaching and eventually influence the students.

Another skill teachers should possess in order to appropriately manage a classroom is the ability to organise discipline (Hines, 2015). Teacher should be able to calm a student who is disruptive or noisy and control disruptive behaviour. It is possible to implement if the teachers are able to perform ground regulations and is consistent in their enforcement during the whole term. Furthermore, students have inclination to misconduct once they feel that regulations are no longer being enforced. Frankly stating, enforcing and ascertaining the students understand the rationale behind the regulations will make them realize their relevance towards the learning process.

Classroom management and student engagement are in close association. If the students are engage actively in the classroom, the interruption declines and the classroom are more in order (Shaukat, 2011). Based on self-efficacy theory, individuals with high sense of efficacy are more likely to participate in inspiring activities, struggle to achieve higher ends, and persist in facing difficult situations (Bandura, 1977). Therefore, teachers with high sense of efficacy should demonstrate behaviours that express this reproductive ability.

Efficacy for Student Engagement

In the classroom context, Harlin, Roberts, Briers, Mowen, and Edgar (2007) define student engagement as "the ability to persuade students to want to learn" (p. 79). Students who are sustained in their learning will be enthused to acquire knowledge and resolve more at school and their attainment will enhance. Teachers who inspire students to learn are supposed as having robust teaching efficacy beliefs – they convince in their capabilities to influence student learning (Tschannen-Moran and Hoy, 2001). Student engagement is important to motivate students during the learning process. Students are likely to be successful in their effort if they are inspired to learn.

One research in particular (Raudenbush, Rowan and Cheong, 1992) investigated the relationship between student engagement and teacher efficacy in a sample of academic teachers from 16 high schools. Teachers were required to answer the questions according to the types of students they had (e.g: vocational, general (non-college), college (non-honours) honours or mixed) in each class, what percent of the students in each class they thought were actively engaged, and their level of efficacy in each class. The finding of this research indicated significant track effects on teacher's level of efficacy, showing a strong positive relationship between student engagement and teacher efficacy.

Efficacy for Instructional Strategies

Instructional strategy refers to a method of teaching that a teacher uses in his or her teaching to help students' learning. The goal of instructional strategies is to motivate students to learn, to involve them and help them concentrate on whats are being taught. Teaching strategy is very subjective. Teachers can choose from a number of teaching strategies because there is NO one best strategies. It is crucial for teachers to give variety to their instruction to manage the students' pleasure in learning and also to give them chances to react with their content in a various way.

Bandura (1997) points out that high instructional efficacious teachers believe that students who are having difficulties and unmotivated can be taught through additional effort and proper teaching techniques and strategies. The higher self-efficacy beliefs teachers have, the better instructional quality they have (Holzberger, Philipp, and Kunter, 2013). Teachers with high sense of efficacy tend to be more understanding and tolerance in managing their students. They utilize small group instructions with more proficient and flexibility (Gibson and Dembo, 1984; Muijs and Reynolds, 2001), show greater interest in their teaching (Allinder, 1994), allocate double the amount of time in interactive teaching (Smylie, 1988) and spend more time to whole class instruction (Gibson and Dembo, 1984). They are also more likely to apply new approaches and strategies in their teaching and are more respectful to low capacity students (Brouwers and Tomic, 2001; Ross and Bruce, 2007; Ross, 1994) and have greater commitment to teaching (Coladarci, 1992)

Efficacy for Language Use

Language is an important communication tool in human life. People communicate with another through language about their needs, feelings, thoughts, experiences, ideas, knowledge, getting information, adding knowledge, understanding others, and so on.

Learning language formally occurs in school. Therefore, the language teachers play a major role in ensuring students to learn the language efficiently. The importance of language proficiency is more conspicuous in education area because language is the main medium of instruction in teaching and learning process. To scrutinize teacher language proficiency, the dimensions of language proficiency or competence have to be defined and conceptualized. From the outlook of formal linguists, competence is viewed in term of language structures (grammatical competence or linguistic) (e.g., Chomsky, 1965), whereas sociolinguists take a broader point of view. They view competence as knowledge and the ability to utilize the language. Many researchers looked the language proficiency based on the four skills; listening, speaking, reading and writing.

Studies investigating foreign language teacher efficacy have shown a direct relationship between instructors' efficacy in teaching foreign language and their foreign language proficiency (Chacón, 2005), which suggests that content knowledge plays a role in language instructors' confidence to teach languages. Additionally, research shows that teacher efficacy in teaching languages is related to teachers' decisions to leave the classroom (Swanson, 2013). That is, individuals with a lower sense of efficacy in teaching languages are more likely to leave the profession than those who are more confident in their abilities, which adds to the language teacher shortage

METHOD Measure

Teacher efficacy is a multidimensional construct. It is designed to measure the respondents' teaching efficacy in teaching Arabic. It has four (4) dimensions: Teacher efficacy for language use, teacher efficacy for classroom management, teacher efficacy for teaching strategies and teacher efficacy for student engagement. The first dimension, which is, teacher efficacy for language use, is self-constructed instrument. The other three dimensions, most of them, are adopted from Teachers' Sense of Efficacy Scale (TSES) by Tschannen-Moran & Woolfolk Hoy (2001) with some modification to suit the Arabic teaching context in Malaysia, few new items were added for the study. Thus, the validity of the instruments needs to be re-established. Respondents are required to rate the statements on a seven-point Likert scale, ranging from *not at all* to *always*.

Sample

There are a number of literatures that proposed a large sample size when conducting factor analytic procedure especially for confirmatory factor analysis (CFA) using structural equation modeling (SEM) (Hair, Black, Babin, and Anderson, 2010). Whereas, Hoelter (1983) and Garver and Mentzer (1999) suggested a 'critical sample size' of 200. According to Schumacker and Lomax (2010) after reviewing several published SEM research, they found that the sample size between 250 to 500 subjects is enough for the effective use of SEM where the complexity of the model enhances the required the sample size. Hoe (2008) concluded, as a general rule of thumb, any number above 200 is understood to provide adequate statistical power for data analysis. The population of the study consisted of 487 teachers in National Religious Secondary Schools in Malaysia. Using Krejcie and Morgan's (1970) table for determining sample size, 236 teachers were randomly selected as the sample.

The 28 items instrument involved 236 respondents consisting of 94 (39.8%) male and 142 (60.2%) female teachers. The number of female teachers was larger than the number of male teachers. This seems to reflect the current phenomenon of female teachers having an impact on the teacher population in the Malaysian secondary school setting. According to the *Basic School Information* by Ministry of education, Malaysia, the total number of teachers working in Malaysian public secondary school as of December 2014 was 181747 (Education Management Information System, 2015). Seventy percent of them were females and 30% were males.

Data Analysis

The proposed model is estimated by Covariance Based SEM, which is a powerful multivariate technique for analysing measurement model. The measurement model is estimated using confirmatory factor analysis (CFA) to test whether the latent variables possess sufficient construct validity.

CFA is used to validate Teacher Efficacy scale in terms of convergent and discriminant validity (Worthington & Whittaker, 2006). Convergent validity measures the extent to which indicators of a specific construct share a high proportion of variance in common (Hair et al., 2010). According to Hair et al. (2010), there are three statistical measures in determining the convergent validity: (a) standardized factor loadings, (b) average variance extracted (AVE), and (c) construct reliability (CR). Standardized factor loading signifies the correlation between the variables and the factors. Meanwhile, AVE is a measure of convergence among a set of items denoting a latent construct in Structural Equation Modeling (SEM). It is computed as an average percentage of variance explained among the items of a construct (Hair et al., 2010). CR refers to a measure of reliability and internal consistency of the items that represent a latent construct in SEM. The adopted cut-off values of these three statistical measures are as follows: (a) Standardized factor loading (λ) is .50 and above, AVE is .50 and above, and Composite Reliability is .70 and above. All the cut-off values are recommended by Hair et al (2010).

FINDINGS Assessment of the Measurement Model

The measurement model was assessed by confirmatory factor analysis (CFA). This study uses Maximum Likelihood (ML) estimator and it is considered relatively robust to violation of normality assumptions (Bollen, 1989). According to Segars and Grover (1993), the measurement model should be evaluated first before generating the best overall model fit. The hypothesized 4-factor measurement model was evaluated using confirmatory factor analysis to assess the factorial validity of the measurement model.

The overall model fit was assessed in terms of four measures. These indices included the traditional chisquare (χ^2), degree of freedom (df), normed chi-square (χ^2 /df), Comparative Fit of Index (CFI) and Root Mean Square of Error Approximation (RMSEA) to observe the model fit (Hair et al., 2010). The CFI value should exceed 0.90 and the RMSEA value should be lower than 0.08 in order to obtain an acceptable model fit (Schumacker and Lomax, 2010). Hayduk (1988) suggests that χ^2 /df should not exceed 3.0. Accordingly, the fit statistics showed that the model did not fit the data (χ^2 /df = 3.51; CFI = .847; RMSEA = .103). The results suggest for a revision of the model since there were many low-loaded indicators, some of which showed big error variances.



Figure 1: The Revised Measurement Model of Teachers' Sense of Efficacy

Figure 1 depicts the revised 14-item four-factor measurement model analysed by performing another series of CFA. The chi-square goodness-of-fit test showed that the model did not fit the data well, χ^2 value of 166.054 with 71 degrees of freedom, p < .05. This is expected with more than 200 data since chi-square test is sensitive to large sample size (Hair et al., 2010). Nonetheless, the baseline comparisons fit indices of CFI exceed 0.9 (CFI = 0.950), the normed chi-square is 2.339 and RMSEA showed a value of 0.078 indicating a good model fit.

The values for composite reliability (CR) and average variance expected (AVE) are needed in order to obtain the convergent validity. As can be seen from Table 1, all the composite reliability values are above 0.70. The average variance extracted (AVE) is all above 0.50. Therefore, we can conclude that convergent validity has been established.

Construct	Item	Internal Reliability	Convergent Validity		
		Cronbach's alpha	Factor Loading	CR ^a	AVE ^b
Language Use	use4		.812		
	use1		.796		
	use2	.889	.839	0.892	0.622
	use3		.758		
	use6		.735		
Classroom Management	class5		.827		
	class3	.814	.655	0.829	0.622
	class6		.867		
Student Engagement	engage3	.853	.821	0.861	0.675

Table 1: Result of	CFA	for Measurement	Model
ruore r. ressart or	~ 1 1 1	101 measurement	, 11100001

Prosiding Persidangan Kebangsaan Bahasa Arab (NCAL2015)

Teaching Strategy	engage2		.887		
	engage1		.752		
	strategy6		.738	0.850	0.655
	strategy5	.836	.870		
	strategy4		.814		

Note:

^a Composite reliability (CR) = (square of the summation of the factor loadings)/ $\{$ (square of the summation of the factor loadings) + (square of the summation of the error variances)}

b Average Variance Extracted (AVE) = (summation of the square of the factor loadings)/{(summation of the square of the factor loadings) + (summation of the error variances)}

Next, we assessed the discriminant validity that is the extent to which a measure is not a reflection of other variable. Discriminant validity can be tested by comparing the square roots of the AVE with the correlations among the constructs. It can be established by low correlations between the all the measure of interest and the measure of other constructs. Also according to Fornell and Larcker (1981) when the square root of the average variance extracted is greater than its correlations with all other constructs then discriminant validity has been established. As shown in Table 2, all of the square roots of the AVE by constructs were greater than the correlation among constructs, so discriminant validity was supported. In brief, the measurement model assessment, including convergent and discriminant validity measures were satisfactory.

Table 1: Discriminant validity of the constructs

	Classroom	Teaching	Use	Student
Classroom	0.788			
Teaching	0.769	0.809		
Use	0.681	0.723	0.789	
Student	0.515	0.702	0.532	0.822
Note: Diagonals represent the square root of the average variance extracted				

while the other entries represent the squared correlations

The initial construct validity was plausibly established for this measurement model. Thus, we can proceed to explore the second-order factor that could possibly substantiate the construct of teacher efficacy.

The results for the second order measurement model are shown in Figure 2. The model produced the χ^2 (73) = 172.031, p < .001. Overall, the model was adequately fit with CFI of .948 and RMSEA values of .078 which surpass the cut-off points respectively. In addition, the value of normed chi-square ($\chi^2/df = 2.357$) is within the proposed range. Therefore, the existence of the second-order factor would allow researchers to justify a rather strong relationship that showcased by the first-order factors.



Figure 2: Second Order of CFA for Teachers' Sense of Efficacy

Invariance of TSE Measure

The measurement model was further tested for gender-invariant through a three-stage multigroup analysis. This would enhance the psychometric properties of the measurement model. Firstly, a concurrent analysis was conducted on both the male and female samples, with unrestricted loadings that represent a baseline model. Subsequently, all loadings were restricted or constrained to be similar for both the male and female groups. This constrained model of TSE yielded a different chi-square value. This new chi-square value from the constrained model was finally tested against the chi-square value of the baseline model to determine the significant differences.

The invariance analysis across gender resulted in a statistically insignificant change in the chi-square value, $\chi^2(27) = 49.65$, p > .001; this implied that the constrained model did not get worst-off, given the equality constraints. In other words, the loadings did not differ significantly across gender. By virtue of the invariance analysis, the measurement model of teacher efficacy behaved equally with regards to the male and female samples or gender is not a moderating variable. Hence, the invariance analysis rather enhances the psychometric properties of teacher efficacy measurement model.

DISCUSSION AND CONCLUSION

This study was conducted to assess the reliability and validity of the teachers' sense of efficacy inventory. The study used a survey method for data collection and the measurement model was examined by applying CFA procedure. The results of the CFA teacher efficacy as a multidimensional construct with its four underlying dimensions consisting of efficacy for language use, efficacy for classroom management, efficacy for student engagement and efficacy for teaching strategies. The results suggest that the overall fit of four-factor model was adequate. The valid results of four dimensional measures of teacher efficacy are ensured with the poor initial items having been deleted using the rigorous statistical techniques. It is apparent that, the efficacy for language use dimension is represented by five indicators related to teaching listening skill, speaking skill, reading skill, writing skill and using Arabic language to communicate with students. While, the efficacy for classroom management is indicated by three indicators which are encouraging students to hang their assignments at wall, preparing classroom activities to attract student interest and making Arabic class enjoyable. The efficacy for teaching strategies dimension is also explained by three indicators namely giving explanation and relevant example, preparing challenging assignment, and diversifying activities and exercises to enhance students in mastering Arabic language. Lastly, the efficacy for student engagement dimension is signified by three

indicators namely motivating students who show low interest, convincing students, explaining students the benefits of learning Arabic.

Since this is one of the early attempts to establish the psychometric properties of teachers' sense of efficacy in teaching Arabic in Malaysia context, the study is restricted in terms of its generalizability. The study was conducted in National Religious Secondary Schools involving rather a small sample size. Thus, further inquiry is required to validate the instrument with teachers from other types of school (i.e government assisted schools, religious secondary schools, private religious schools etc) and with a bigger sample which would allow more generalizable results.

Examining teacher efficacy could be a powerful tool to understand and improve teacher selfcompetency. While it is understood that efficacy is a future-oriented judgment that has to do with the teacher's perception of competence rather than actual level of competence. It could be inferred that slightly overestimating one's actual capabilities that might have a positive effect on performance. On the other hand, Bandura's (1977) self-efficacy theory does suggest means for influencing efficacy beliefs (e.g., mastery experience, vicarious experiences, persuasion, and emotional and physiological states), and teacher educators might attempt to use these in their training. In view of the potential fruitfulness of teacher efficacy research for teacher education, it is time for Malaysian educators to rise to the challenge of conducting teacher efficacy research to accommodate and evaluate the changes introduced by waves of education reforms in this decade.

REFERENCES

- Allinder, R. M. (1994). The relationship between efficacy and the instructional practices of special education teachers and consultants. *Teacher Education and Special Education*, 17(2), 86–95. doi:10.1177/088840649401700203
- Anderson, J. C., and Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika*, 49(2), 155–173.
- Anderson, J. C., and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423. doi:10.1037/0033-2909.103.3.411
- Armor, D., Conry-Oseguera, P., Cox, M., King, N., McDonnell, L., Pascal, A., ... Zellman, G. (1976). Analysis of the School Preferred Reading Program in Selected Los Angeles Minority Schools. Santa Monica, CA: Rand.
- Ashton, P. (1984). Teacher efficacy: A motivational paradigm for effective teacher education. *Journal of Teacher Education*, 35, 28–32.
- Ashton, P., and Webb, R. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York, NY: Longman.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/847061
- Bandura, A. (1993). Perceived Self-Efficacy in Cognitive Development and Functioning. *Educational Psychologist.* doi:10.1207/s15326985ep2802_3
- Bandura, A. (1995). Exercise of Personal and Collective Efficacy in Changing Society. In A. Bandura (Ed.), *Self-Efficacy in Changing Society* (pp. 1–45). Cambridge: Cambridge University Press.

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York, NY: W.H. Freeman and Company.

Bleicher, R. E. (2004). Revisiting the STEBI-B: Measuring Self-Efficacy in Preservice Elementary Teachers. *School Science and Mathematics*, *104*(8), 383–391. doi:10.1111/j.1949-8594.2004.tb18004.x

- Bollen, K. A. (1989). *Structural Equations with Latent Variables*. New York: Wiley. Retrieved from http://as.wiley.com/WileyCDA/WileyTitle/productCd-0471011711.html
- Brouwers, A., and Tomic, W. (2001). The Factorial Validity of Scores on the Teacher Interpersonal Self-Efficacy Scale. *Educational and Psychological Measurement*, 61(3), 433–445. doi:10.1177/00131640121971301
- Chacón, C. T. (2005). Teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela. *Teaching and Teacher Education*, 21(3), 257–272. doi:10.1016/j.tate.2005.01.001
- Coladarci, T. (1992). Teachers 'Sense of Efficacy and Commitment to Teaching. *The Journal of Experimental Education*, 60(4), 323–337. Retrieved from http://www.jstor.org/stable/20152340
- Dembo, M. H., and Gibson, S. (1985). Teachers' sense of efficacy: An important factor in school improvement. *The Elementary School Journal*, 86(2), 173. doi:10.1086/461441
- Education Management Information System. (2015). Education Management Information System Portal, Ministry of Education, Malaysia.
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-(1), 39–50.
- Garver, M. S., and Mentzer, J. T. (1999). Logistics research methods: Employing structural equation modeling to teast for construct validity. *Journal of Business Logistics*, 20(1), 33–57.
- Gibson, S., and Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76, 669–682. doi:http://dx.doi.org/10.1037/0022-0663.76.4.569
- Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Harlin, J., Roberts, G., Briers, G., Mowen, D., and Edgar, D. (2007). A longitudinal examination of teaching efficacy of Agricultural science student teachers at four different institutions. *Journal of Agricultural Education*, 48(3), 78–90. doi:10.5032/jae.2007.03078
- Hayduk, L. A. (1988). Structural Equation Modeling with LISREL: Essentials and Advances. JHU Press.
- Hines, M. G. (2015). Classroom management skills for English teaching abroad. *Transitions Abroad*. Retrieved April 8, 2015, from http://www.transitionsabroad.com/listings/work/esl/articles/classroom-managementskills-for-teaching-english-abroad.shtml
- Hoe, S. L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of Applied Quantitative Methods*, *3*(1), 76–83.
- Hoelter, J. W. (1983). The analysis of covariance structures: Goodness-of-fit indices. *Sociological Methods and Research*, 11, 325–344.
- Holzberger, D., Philipp, A., and Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. *Journal of Educational Psychology*, 105(3), 774–786. doi:10.1037/a0032198
- Krejcie, R. V, and Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607–610.
- Lee, J. (2009). Teachers' Sense of Efficacy in Teaching English, Perceived English Language Proficiency, and Attitudes toward the English Language: A Case of Korean Public Elementary School Teachers. The Ohio State University.

- Martin, K., Yin, Z., and Baldwin, B. (1998). Construct validation of the attitudes and beliefs classroom control inventory. *Journal of Classroom Interaction*, 33(2), 6–15.
- Marzano, R., Marzano, J., and Pickering, D. (2003). *Classroom management that works: Research-based strategies for every teacher*. Moorabbin: Hawker-Brownlow Education.
- McKinnon, M., Moussa-Inaty, J., and Barza, L. (2014). Science teaching self-efficacy of culturally foreign teachers: A baseline study in Abu Dhabi. *International Journal of Educational Research*, 66, 78–89. doi:10.1016/j.ijer.2014.03.001
- Muijs, D., and Reynolds, D. (2001). Being or doing: The role of teacher behaviors and beliefs in school and teacher effectiveness in mathematics, a SEM analysis. In *Annual Meeting of the American Educational Research Association*. Seattle.
- Ozkan, H., Dalli, M., Bingol, E., Metin, S. C., and Yarali, D. (2014). Examining the relationship between the communication skills and self-efficacy levels of physical education teacher candidates. *Procedia Social and Behavioral Sciences*, *152*, 440–445. doi:10.1016/j.sbspro.2014.09.228
- Raudenbush, S. W., Rowan, B., and Cheong, Y. F. (1992). Contextual effects on the self-perceived efficacy of high school teachers. *Sociology of Education*, 65(2), 150–167. Retrieved from http://www.jstor.org/stable/2112680
- Ross, J. A. (1992). Teacher Efficacy and the Effects of Coaching on Student Achievement. *Canadian Journal of Education / Revue Canadienne de L'éducation*, 17(1), 51. doi:10.2307/1495395
- Ross, J. A. (1994). The impact of an in-service to promote cooperative learning on the stability of teacher efficacy. *Teaching and Teacher Education*, 10(4), 381–394.
- Ross, J., and Bruce, C. (2007). Professional Development Effects on Teacher Efficacy: Results of Randomized Field Trial. *The Journal of Educational Research*, *101*(1), 50–60. doi:10.3200/JOER.101.1.50-60
- Schumacker, R. E., and Lomax, R. G. (2010). A Beginner's Guide to Structural Equation Modeling. doi:10.1002/9781118133880.hop202023
- Segars, A. H., and Grover, V. (1993). Re-examining perceived ease of use and usefulness. *MIS Quarterly*, 17(4), 517–525.
- Shaukat, S. (2011). Development and validation of in-service teachers' self-efficacy beliefs in the context of Pakistan. *Evaluation & Research in Education*, 24(2), 121–141. doi:10.1080/09500790.2011.556249
- Smylie, M. (1988). The Enhancement Function of Staff Development: Organizational and Psychological Antecedents to Individual Teacher Change. *American Educational Research Journal*, 25, 1–30.
- Swanson, P. B. (2013). From teacher training through the first year on the job: Changes in foreign language teacher efficacy. *Electronic Journal of Foreign Language Teaching*, 10(1), 5–16.
- Tran, N. a., Schneider, S., Duran, L., Conley, A., Richland, L., Burchinal, M., & Martinez, M. E. (2012). The effects of mathematics instruction using spatial temporal cognition on teacher efficacy and instructional practices. *Computers in Human Behavior*, 28(2), 340–349. doi:10.1016/j.chb.2011.10.003
- Tschannen-Moran, M., and Hoy, A. W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. doi:10.1016/S0742-051X(01)00036-1
- Van Aalderen-Smeets, S. I., Walma van der Molen, J. H., and Asma, L. J. F. (2012). Primary teachers' attitudes toward science: A new theoretical framework. *Science Education*, 96(1), 158–182. doi:10.1002/sce.20467