Development and Validation of Efficacy Scale for Teachers

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Abstract The present study developed and validated an instrument on teacher efficacy. Thirty-seven (37) situational judgment items were developed capturing the seven domains of the Philippine Professional Standards for Teachers (PPST) and was administered to a total of 585 basic education teachers selected through purposive sampling. Analysis showed that all the items had acceptable discrimination indices ranging from .469 to .824. Reliability analysis suggested high internal consistency among items, signifying that items are measuring teacher efficacy. Validity evidences based on relations to other measures suggested that the newly developed instrument share common characteristics with Bandura's Teacher Efficacy Scale and measured a different construct from Batulan's Teacher Burnout Instrument. Given the challenges of the K-12 Basic Education Program, the instrument may serve as a pivot point in helping teachers think about the ways in which they approach tasks in their classrooms as they reflect on their personal assessment of competence.

***Keywords*:** instrument development & validation, Philippine Professional Standards for Teachers, teacher efficacy

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Introduction

In today's continuously growing diversity of students in the classroom including higher standards of accountability, teachers in the present era may find their jobs even more challenging. For instance, the implementation of the K-12 reform, also known as the R.A. 10533 in 2013 has changed the landscape of teacher quality requirements in the Philippines. Specifically, the education reform process warrants an equivalent supportive focus on teacher quality – high quality teachers who are properly equipped and prepared to assume the roles and functions of a K to 12 teachers (Department of Education, 2017). While there seems to be various attributes that could significantly contribute to teacher quality, one of the most important beliefs that has received considerable attention in influencing both student and teacher outcomes in the education context is teacher efficacy.

The concept of teacher efficacy, as a tenet of self-efficacy, was originally developed by Albert Bandura to comprise a part of his social cognitive theory (Bandura, 1997). Bandura basically defined self-efficacy as a conviction in one's own capability to organize and perform a certain task necessary to produce certain outcomes. Ng, Nicolas, and Alan (2010) likewise proposed that "teachers' beliefs are the ideas that influence how they conceptualize teaching" and this self-conception is central to efficacy in teaching. Teacher efficacy has also been described by Armor and colleagues as "teachers" beliefs in their abilities to affect student performance (Dellinger, Bobbett, Olivier, & Ellett, 2008).

Furthermore, the study by Klassen and colleagues, (2009) carried out in five different countries conformed that a high correlation existed between teachers' job satisfaction levels and teaching self-efficacy beliefs. Exploring the relationship between Teacher Self-Efficacy Belief (TSEB) and job satisfaction may have implications for teachers' job performance, and by extension, the academic achievement of

students (Klassen et al., 2009, p. 68). It could also be stated that there exists a positive correlation between the self-efficacy belief related to teaching and attitude (Demirel & Akkoyunlu, 2010). In fact, teachers' self-efficacy is likewise a positive and significant predictor of children's vocabulary gains only within the context of high quality, emotionally supportive classrooms (Guo, Piasta, Justice & Kaderavek, 2010).

Given the centrality of self-efficacy beliefs in teachers' lives, sound assessment of this construct is crucial to the understanding and prediction of teacher behaviors that have great implications in student outcomes and the teaching profession, in general. Reviewing the relevant literature, however, shows that there is a dearth of researches that dwell particularly on developing local instruments measuring the efficacy of teachers. For instance, in various local researches on teacher efficacy found (Chiong, 2009, Kong, 2008, Serrano, 2005, Dizon, 2004, Ravina-Santos, 2003, Ortigas, 2000, Mendoza, 2002, Latoza, 1997), the assessment of efficacy of teachers were primarily based on the works of Tschannen-Moran, Woolfolk; and Hoy (1998) Gibson; and Dembo's (1984). Given the ongoing education reforms, including the implementation of the K-12 Basic Education Program of the Department of Education, the researchers believe that there is a need to develop local assessment instruments of greater comprehensiveness and of increasing specificity to better capture the complexity of teacher functioning. Hence, the unique feature of the newly-developed instrument lies on its re-conceptualization of the notion of teacher efficacy by taking into consideration the additional complexity of teachers' functioning introduced by the more recent education reform efforts in the Philippines. That is, in contrast with foreign-based measures of teacher efficacy, the newly-developed instrument aims to provide a more comprehensive model of teacher efficacy that will capture the reflection of a Filipino teacher's analysis of the teaching task and assessment of his or her personal teaching competence

that is aligned with the Philippine Professional Standards for Teachers or PPST (Department of Education, 2017). In this way, the added element of the analysis of task and assessment of competence highlighted the specificity of the teacher efficacy construct while adhering to the central notion of Bandura's social cognitive theory of the interdependent nature of efficacy beliefs, environment, and behavior. Finally, it is hoped that the validation procedures of the newly developed instrument in relation to the psychometric properties could contribute in the literature of developing similar scales contextualized in the local setting.

Framework of the Study

In the present study, the construct of teacher efficacy was measured by contextualizing the notion of self-efficacy explicated in Bandura's Social Cognitive Theory through the use of the PPST domains and strands in designing teaching situation stimuli and the levels of Krathwohl's Taxonomy of Affective Domain in categorizing the response actions (refer to Figure 1).

As underscored by Bandura's social cognitive theory, a dynamic interaction existed among various factors to determine motivation and behavior: cognitive, behavioral, personal, and environmental (Crothers, Hughes, & Morine, 2008). Specifically, the theory adheres to the notion that individuals possess self-beliefs and system that enables them to exercise a measure of control over their thoughts, feelings, motivation, and action (Bandura, 1997). With these in mind, the researchers find it meaningful to weave a second framework in assessing teacher efficacy – the Taxonomy of Affective Domain (Krathwohl, Bloom, & Masia, 1956). In this way, a more complete picture of assessing teacher efficacy could be achieved by linking the efficacy beliefs of teachers to their value system, particularly in the way they address

the given situation. Five major levels of internalization are identified in the structure of the affective domain taxonomy: (a) receiving, (b) responding, (c) valuing, (d) organization, and (e) characterization by a value or value complex. According to the taxonomy, receiving is the lowest level of affective learning outcome in the taxonomy. Responding is the next of learning outcome in the affective domain and entails the active participation on the part of the student. Valuing represents the third level of affective behavior and is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. Organization represents the fourth level of the taxonomy and is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Characterization by value represents the highest level of

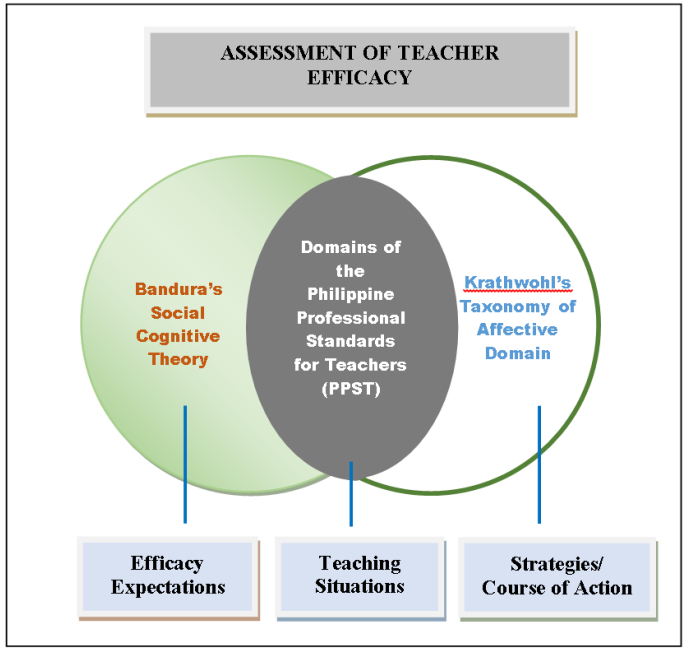

Figure 1. Conceptual Paradigm of the Efficacy Scale for Teachers

affective behavior and would mean that a value system controls a person's behavior. In this level, the person has formed a certain value system that has control over his/her behavior for a sufficiently long time, which allow him/her to develop a characteristic lifestyle.

Finally, in order to contextualize both the Bandura's notion of teacher efficacy and that of Krathwohl's Taxonomy of Affective in assessing efficacy beliefs among Filipino Teachers, the researchers used the teaching domains and strands exemplified in the Philippine Professional Standards for Teachers (PPST) to capture a more distinct indicators of effective performance as reflected by the teaching situations to elicit efficacy beliefs among teachers. Briefly, the Philippine Professional Standards for Teachers, which is built on National Competency Based Teacher Standards or the NCBTS, complements the reform initiatives on teacher quality from pre-service education to in-service training. It articulates what constitutes teacher quality in the K to 12 Reform through well-defined domains, strands, and indicators that provide measures of professional learning, competent practice, and effective engagement (Department of Education, 2017).With the national adoption and implementation of the PPST(Dep Ed Order No. 42, series 2017), the researchers considered it meaningful to align the teaching situations with the PPST to contextualize the expectations of teachers' increasing levels of knowledge, practice, and professional engagement to Filipino teachers.

Purpose of the Research

The study developed and validated efficacy scale for basic education teachers – elementary and junior high school levels. Specifically, the study sought answers to:

1. construct items that reflect school-related situations which manifest indicators of teacher efficacy, assess and tryout the items, and determine

the indices of discrimination of each item; and
2. determine the reliability of the instrument and establish evidences of validity.

Methodology

The present study utilized the methodology involved in a research and development (R & D) study. According to Gay (1990), the major purpose of R & D efforts is not to formulate or test a theory but to develop effective products for use in schools, which in the context of the study focuses on the assessment of teacher efficacy. As such, the procedures undertaken placed emphasis on the specific activities carried out in each of the four stages of developing and validating an instrument: (1) planning; (2) test construction; (3) tryout; and (4) instrument evaluation and finalization. Planning stage aims to delineate the operational definition of teacher efficacy construct. Test construction stage deals with the development and expert review of teaching situations and response actions. Tryout stage involves the administration of the instrument to teacher-respondents and analyzing the quality of items. Instrument evaluation and finalization aims to gather evidence of validity and estimate the reliability to finalize the instrument. The details of each stage are explained in the data collection section.

Participants

Participants of the study included in-service teachers at the basic education level – elementary and junior high school. The researchers used purposive sampling guided by the following criteria: gender, age, highest educational attainment, grade level taught in the junior school, and number of years in teaching. Specifically, the researchers exerted best efforts to ensure a balance in the distribution of participants based on the mentioned predetermined criteria.

For the first tryout of the instrument, a total of 100 teachers participated while for the second tryout administration, a total of 410 teachers were included in the sample. Lastly, a total of 75 teachers participated in the final administration of the instrument that is intended for the evaluation and finalization stages of the test. In all test administrations, the researchers ensured the safety and informed consent of the participants.

Data Collection

The present study followed the four stages of instrument development and validation as follows:

Stage 1 – The Planning Stage. Adhering to the conceptual framework of the study, a comprehensive review of literature was carried out to gather and confirm information about teacher efficacy – its components and behavioral as cited by different authorities and researchers. After the operational definition of teacher efficacy indicators/manifestations has been delineated, the researchers decided to use situational judgment item format (i.e. built around hypothetical scenarios to which the respondent would be expected to react accordingly) to be the most appropriate approach in assessing the construct of teacher efficacy. Using this format, the analysis of teaching tasks and its context is possible as it allows the teachers to assess their competence to cope with various situations they encounter in their practice of teaching.

Stage 2 – Test Construction Stage. In constructing the teacher efficacy items, the researchers followed the guidelines underscored by Bandura (2006) in constructing self-efficacy scales. First, a total of 37 teaching situations were prepared that corresponded to the specific teaching strands specified in the PPST. These teaching situations served as the stimuli for which the teacher will be asked to assess his/her efficacy by responding to this statement: "I

believe I can successfully handle this situation" using a scale of 1 (very low) to 5 (very high).Afterwards, the researchers prepared the response options that included possible strategies or actions to address a given teaching situation, and were levelled based on the Krathwohl's Taxonomy of Affective Domain – receiving, responding, valuing, organization, and characterization by value. In contrast with how the teaching situations were presented to the respondent, the researchers ensured that the response options were not presented in a strict sequential format to avoid giving cues to the respondents in selecting their response.

After developing the teaching situations and response options, they were subjected to content validation by 11 experts to determine which are acceptable, needs revision, or not acceptable. The researchers prepared an evaluation rubric (Appendix A) to guide the experts as shown, based on the criteria formulated by Levy (1966, cited by Ibanez 2003) but modified in the context of the present study.

Stage 3 – Tryout and Item Analysis Stage. The tryout administration consisted of two activities: first tryout and second tryout of the items. The objectives of the first tryout included: (1) to obtain preliminary information on the statistical characteristics of the items (i.e. discrimination indices); (2) to determine the suitability of the language to the target respondents including the clarity of the directions in responding to the items; and (3) to gain feedback on the adequacy of initial time limits set by the researchers in answering the teacher efficacy instrument. Meanwhile, the second tryout administration aims to ascertain the stability of the statistical properties of the items, particularly the discrimination indices and to gather feedback whether the concerns on clarity of directions and adequacy of time limits were properly addressed. In both administrations, an informed consent form was also given to the respondents before administering the instrument to properly inform them of the nature of the study, how their responses will be used, and the

confidentiality of information obtained from them. Specifically, they were asked to fill-out the informed consent form and affix their signature on each of the form to indicate that they accepted the invitation to participate in the study. Lastly, the duration of the study was confined only on the estimated time to complete the instrument so as not to take much time from the respondents who participated in the tryout activities.

After the tryout administration, the responses were encoded in Excel worksheets to facilitate the analysis of the items. Then, scoring of item responses was done. First, the responses on the personal efficacy statements were scored depending on the level of competence as perceived by the teacher. Since the scale has five points, ranging from very low to very high, scoring was done in the usual manner of assigning 1 for the response of very low and gradually increasing by 1 point as it reaches the response of very high, which is 5. Meanwhile, for the selected strategies to address the given teaching situation, the researcher scored the response based on the affective behavior elicited by the strategy selected by the teacher. For instance, if the teacher has selected a strategy that calls for a "receiving" behavior, a score of 1 was given to that response.

Item analyses were carried out in both the first and second tryout administrations to obtain information regarding the quality of items included in the instrument. Specifically, the item-total correlation was used to determine the ability of the items to distinguish teachers with high and low efficacy beliefs. The item-total coefficients were computed upon generating the reliability indices of the scale using the Cronbach's alpha. In reviewing the item statistics yielded by the item analysis, the recommendation of Hair, et.al. (1998) was considered in accepting or rejecting the items. That is, items greater than ±.30 to meet the minimal level; coefficients of ±.40 are considered more important; and if the coefficients are ±.50 or greater, they are considered practically significant.

Stage 4 – Evaluation and Finalization Stage. In the evaluation and finalization stage, the reliability and validity of the scores yielded by the newly developed instrument were established. In particular, the estimation of the reliability of the instrument was derived from the following internal consistency coefficients: (1) item-total correlation or the correlation of the item to the summated scale score to which that particular item is not included, (2) inter-item correlation or the correlation among items, and (3) the use of the Cronbach's coefficient alpha that assesses the consistency of the entire scale. Meanwhile, the validity evidences were based from the following sources: (1) test content, and (2) relations to other variables. The researchers did not conduct factor analysis since it was already established at the start of research that the items included in the instrument captures the seven PPST teaching domains. Likewise, the internal consistency measures were considered suffice for the meantime in evaluating the internal structure of the instrument.

Data Analysis

The researchers utilized descriptive statistics such as percentages, means, and standard deviations in analyzing the evaluation ratings of experts on the items included in the instrument. Textual interpretation was also used in reporting the supporting qualitative data. This was particularly utilized in scoring the selected strategies of teacher-respondents for each item included in the instrument. For instance, in reporting the affective level score, the most frequent level of affective response of the strategies selected by the teacher on a particular component (domain) or in the whole instrument was identified. For example, if most of the strategies selected by the teacher on component (domain) 1 are in the receiving level, it may show an indication that the teacher tends to use strategies that emphasize learner compliance on content knowledge and pedagogy.

Moreover, reliability analyses using Cronbach's alpha and correlation analysis using Pearson Product Moment Correlation were conducted to estimate the reliability and gather evidence on the validity of the scores yielded by the instrument, respectively. All statistical analyses were carried using the SPSS Version 12 and set at 0.05 level of significance.

Results and Discussion

Developed Efficacy Scale for Teachers

The developed Efficacy Scale for Teachers (Appendix A) assesses a teacher's belief or conviction that he/she possesses the competence to successfully execute behavior or actions to produce the desired outcome. The notion of competence, is contextualized to capture the domains and teaching strands of effective teacher practices specified in the PPST (Department of Education, 2017).

One of the unique features of the newly-developed instrument lies on its re-conceptualization of the notion of teacher efficacy by taking into consideration the additional complexity of teachers' functioning introduced by the more recent education reform efforts in the Philippines. Specifically, the instrument is composed of 37 situational judgment items that allow a teacher to reflect on his/her personal assessment of competence and to select the strategy or action that he/she believes to be the best means to address the given situation. On the assessment of the teacher's conviction that he/she can successfully handle the given situation, the response scale ranges from 1 (very low) to 5 (very high). Meanwhile, on selecting the action/strategy a teacher believes that can best address the situation, response options are levelled based on the affective response that is most likely to be elicited by a particular action.

Furthermore, in contrast with foreign-based measures of teacher efficacy, the newly-developed instrument envisions to provide a more comprehensive model of teacher efficacy that will capture the reflection of a Filipino teacher's analysis of the teaching task and assessment of his or her personal teaching competence that is aligned with the Philippine Professional Standards for Teachers or PPST (Department of Education, 2017). In this way, the added element of the analysis of task and assessment of competent highlighted the specificity of the teacher efficacy construct while adhering to the central notion of Bandura's social cognitive theory of the interdependent nature of efficacy beliefs, environment, and behavior. The detailed description of the Efficacy Scale for Teachers, including its administration procedures, scoring scheme and interpretation and sample items can be found in Appendix B.

Summary of Validation of the Developed Efficacy Scale for Teachers

Results presented in Table 3 generally suggested that most of the teaching situations and response options developed by the researchers were accepted for inclusion in the instrument. Out of the 37 situations, there was no situations rejected based on experts' evaluation. Meanwhile, most of the situations that needed revision were under Domain 3, 7, 5, and 6 respectively indicating that some indication of vagueness were found by experts as the context captured by these situations. On the other hand, a total of 156 responses (representing the five levels of the affective domain) were accepted based on experts' evaluation. With regard to the responses that needed revisions, however, most of them intended to capture the highest level of affective domain which is characterization by value. A reverse trend of findings were observed in the high acceptance of response actions in the lower levels such as receiving and responding.

Table 1. Summary of results of experts' evaluation of teaching situations and responses for the Efficacy Scale for Teachers

Domain	Teaching Situations			Response (Strategies/ Actions)		
	Accepted	For Revision	Rejected	Accepted	For Revision	Rejected
1 – Content Knowledge and Pedagogy	7	0	0	26	9	0
2 – Learning Environment	6	0	0	28	2	0
3 – Diversity of Learners	2	3	0	17	8	0
4 – Curriculum and Planning	5	0	0	23	2	0
5 – Assessment and Reporting	4	1	0	23	2	0
6 – Community Linkages and Professional Engagement	3	1	0	17	3	0
7 – Personal Growth and Professional Development	3	2	0	23	2	0
TOTAL	30	7	0	157	28	0

Note:

Total number teaching situations – 37

Total number of response (to represent the five levels of affective taxonomy) – 185

Items Analysis of the Developed Efficacy Scale for Teachers

As Table 2 shows, all the 37 items included in the first tryout administration of the Efficacy Scale for Teachers had acceptable discrimination indices, ranging from .469 to .824. On the other hand, the discrimination indices of all the 37 items remained to be acceptable using the responses of teachers in the second administration of the test (.537 to .754) also shown in Table 2. Although not all the items had the highest and lowest

discrimination indices in the first tryout administration were not the same as the identified items using the second tryout data, the discrimination indices, were still above the minimum criteria set by Hair and colleagues (1998).

Table 2. Summary results of item analysis for the Efficacy Scale for Teachers

Domain	First Item Analysis (N = 100)				Second Item Analysis (N = 410)			
	Item Placement		Total Number of Items		Item Placement		Total Number of Items	
	Accepted*	Rejected	Accepted	Rejected	Accepted**	Rejected	Accepted	Rejected
1 – Content Knowledge and Pedagogy	1, 2, 3, 4, 5, 6, 7	none	7	0	1, 2, 3, 4, 5, 6, 7	none	7	0
2 – Learning Environment	8, 9, 10, 11, 12, 13	none	6	0	8, 9, 10, 11, 12, 13	none	6	0
3 – Diversity of Learners	14, 15, 16, 17, 18	none	5	0	14, 15, 16, 17, 18	none	5	0
4 – Curriculum and Planning	19, 20, 21, 22, 23	none	5	0	19, 20, 21, 22, 23	none	5	0
5 – Assessment and Reporting	24, 25, 26, 27, 28	none	5	0	24, 25, 26, 27, 28	none	5	0
6 – Community Linkages and Professional Engagement	29, 30, 31, 32	none	4	0	29, 30, 31, 32	none	4	0
7 – Personal Growth and Professional Development	33, 34, 35, 36, 37	none	5	0	33, 34, 35, 36, 37	none	5	0
Total Number of Items			37	0			37	0

**all items are beyond the minimum criteria, except item 2 and item 34*

*** all items are beyond the minimum criteria*

Reliability Estimates of the Efficacy Scale for Teachers

The estimation of item-total correlation coefficient revealed that for the 37 items included in the instrument, the computation yielded an average item-total correlation of .65, indicating that the items correlate very well with the overall

scale. Furthermore, there were no items which gave negligible contribution to the internal consistency of the instrument, indicating that all items belonged to the domain they were intended for (Field, 2005). Such findings further supported the decision of the researchers not to conduct factor analysis since it was already established at the start of research that the items in the instrument will capture the seven domains of the PPST.

Meanwhile, the inter-item correlations (correlation among items) shown in Table 3 indicated that the items included in each domain had moderate inter-item correlations, signifying that the items are relatively measuring similar construct, which is teacher efficacy. Lastly, the Cronbach coefficient alpha of the teacher efficacy instrument is .966, suggesting an excellent internal consistency among items.

Table 3. Summary of reliability estimates of the Efficacy Scale for Teachers using average inter-item correlations and Cronbach's coefficient alpha

Domain	Number of Items	Average inter-item correlations	Cronbach's Coefficient Alpha
1 – Content Knowledge and Pedagogy	7	0.47	.83
2 – Learning Environment	6	0.57	.85
3 – Diversity of Learners	5	0.59	.84
4 – Curriculum and Planning	5	0.62	.86
5 – Assessment and Reporting	5	0.66	.86
6 – Community Linkages and Professional Engagement	4	0.61	.81
7 – Personal Growth and Professional Development	5	0.63	.85
Overall	37	0.59	.97

Validity Evidences of the Efficacy Scale for Teachers

In the present study, evidences based on test content were gathered from experts' logical analysis of the representativeness of the chosen set of items to capture the teacher efficacy construct. The analyses done to ensure that context of teaching situations were aligned with the domains and strands of the Philippine Professional Standards for Teachers (PPST) it intends to capture. That is, the teaching situation must be aligned with the PPST, reflects real-life experiences of teachers, and uses word-appropriate vocabulary (refer to Appendix A). Likewise, experts' judgments were also sought to ensure that the levels of the response options can be distinguished from each other based on the Krathwohl's Taxonomy of Affective Domain.

The validity evidence based on relations to other variables was obtained from the analyses on the relationship of teacher efficacy scores with other tests hypothesized to measure the same constructs (Bandura's Teacher Efficacy Instrument) and tests measuring related or different constructs (Batulan's Teacher Burnout Instrument). The Bandura's Teacher Efficacy Scale has seven subscales, namely (1) efficacy to influence decision making; (2) efficacy to influence school resources; (3) instructional efficacy; (4) disciplinary efficacy; (5) efficacy to enlist parental involvement; (6) efficacy to enlist community involvement; and (7) efficacy to create a positive work climate. Each item is measured on a 9-point scale anchored with the notations: "nothing, very little, some influence, quite a bit, a great deal." In responding to the questionnaire, the teachers are asked to indicate their opinions about each of the statements by circling the appropriate number corresponding to their response. Meanwhile, the Teacher Burnout Instrument was developed by Dr. Emmanuel M. Batulan to address the burnout phenomenon among teachers in the elementary, secondary, and tertiary levels towards the identification of personal, professional, and organizational sources of stress within a particular school system. It is composed of 46 items measured

in a five-point rating scale. It has three components, namely, (1) reduced self-efficacy (2) exhaustion and (3) pessimism and negativity towards others. The reliability estimates using Cronbach's alpha of these three factors were: 0.92 (component 1), 0.89 (component 2), and 0.75 (component 3).

Table 4. Summary of correlations coefficients between the Efficacy Scale for Teachers and Bandura's Teacher Efficacy Scale and Batulan's Teacher Burnout Instrument (N = 75)

		Bandura's Teacher Efficacy Scale (Overall Score)	Batulan's Teacher Burnout Instrument (Overall Score)
Bituin's Efficacy Scale for Teachers (Overall Score)	Pearson Correlation	.813**	-.100
	Sig. (2-tailed)	.000	.394
	N	75	75

*** Correlation is significant at the 0.01 level (2-tailed).*

As Table 4 shows, the Pearson Product-Moment Correlation coefficient of .81 between the total scores yielded by the Efficacy Scale for Teachers, developed by the researchers and that of the Bandura's Teacher Efficacy Scale indicated a high correlation between the two tests ($p < 0.01$). The results is indicative that the two instruments, the Efficacy Scale for Teachers, developed by the researcher share common characteristics with that Bandura's Teacher Efficacy Scale, which provided evidence of validity that theoretically both are similar measures of teacher efficacy. Meanwhile, the correlation between the scores of the two instruments signifies negligible correlation coefficient of -.100. Therefore, these figures show to generalize that the Efficacy Scale for Teachers, developed by the researchers measures a distinct construct from that of the Batulan's Teacher Burnout Instrument, supporting the validity evidence based on relations with other variables that theoretically are measuring different construct.

Conclusion

This study attempted to develop and validate an instrument that would measure the teacher efficacy of elementary and junior high school teachers. Corollary to the above objective, the study sought to find answers while undertaking the following: (1) construct items that reflect school-related situations which manifest indicators of teacher efficacy, assess and tryout the items, and determine the indices of discrimination of each item and (2) determine the internal consistency and reliability of the instrument and establish evidences of construct validity.

Based on the results of data analysis, the present study yielded the following results in relation to its research objectives: First, the Efficacy Scale for Teachers was developed and validated to assess a teacher's belief or conviction that he/she possesses the competence to successfully execute behavior or actions to produce the desired outcome. Second, the reliability analyses of the 37 items included in the instrument suggested that all the items contributed to the overall internal consistency of the items. Meanwhile, the items included in each domain had moderate inter-item correlations indicating that the items are relatively measuring similar construct. Lastly, the Cronbach's coefficient alpha revealed an excellent internal consistency among items. This coefficient is further supported by the relatively high internal consistency among items across the seven domains suggesting that each of the seven domains contributes to the measurement of the whole construct, which is teacher efficacy. Third, the validity evidences based on content revealed that all the items (both the teaching situations and strategies) passed the evaluation criteria: alignment of content, realistic, and appropriate vocabulary before the test was tried out. The correlation coefficients between the scores yielded by the newly developed instrument and that of Bandura's Teacher Efficacy Scale showed that both instruments share common characteristics with regard to the assessment of teacher efficacy while the correlation coefficients between the scores yielded

by newly developed instrument and that of Batulan's Teacher Burnout Instrument showed that these two instruments are measuring different constructs, respectively.

Given the demands of the implementation of the K-12 Basic Education Program, increasing teacher awareness as to how they perceive their efficacy as teachers can considerably help them think about the ways in which they approach their tasks in their classrooms. Using the information yielded by the newly developed instrument could be one of the measures for empowering teachers to not only assess their self-perceived competence but more importantly, their reflection of their own practices and value system as they aspire for personal growth and professional development. Such information could also pave way to possible opportunities for teacher training and professional development programs that could provide teachers with the experiences they may lack in their own personal lives.

For teacher education institutions, the findings that emerged from the present study provide insights that nurturing and developing a teacher's sense of efficacy affect a teacher's career-long drive towards teaching excellence and excellence. As new teachers continue to struggle in their first years after graduating from teacher education program, teacher education institutions may need to have measures that captured effective teacher practices to have a better understanding of what and how courses, field experiences, and other support systems that may impact pre-service teachers' development of self-efficacy.

Finally, the present study offered an extension of the Bandura's teacher efficacy model to include the constructs of knowledge and beliefs in the process of efficacy development by weaving the essential elements of both the Bandura's Social Cognitive Theory and Krathwohl's Taxonomy of

Affective Domain while contextualizing the situations in the local context through the teaching domains of the Philippine Professional Standards for Teachers or PPST.

Recommendations

Towards the development of this Efficacy Scale for Teachers and on the basis of the preceding findings of the study, the researchers are aware of its need for further improvements imposed by the certain limitations of the study such as sampling design, instrument coverage, and statistical analyses. Thus, the following recommendations are offered.

First, in order to further expand the generalizability of the framework, the instrument may also be administered using a larger sample including senior high school teachers and those from private schools in both rural and urban settings.

Second, since the analysis of responses were done at the teaching domain level of the PPST (e.g. content knowledge and pedagogy, learning environment, etc.), further analysis may be done to explore the efficacy profile of teachers on the specific teaching strand under each teaching domain.

Third, considering that there were teaching strands in the PPST that were only represented by a single item in the newly developed instrument, additional items may be written to capture the entirety of the teaching strands such as those under Domain 3, Diversity of Learners.

Lastly, other statistical analysis like factor analysis may be performed to investigate the internal structure of the newly developed instrument.

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Appendix A

Evaluation Rubric in Evaluating the Efficacy Scale for Teachers

Table 1. Teaching situations for the Efficacy Scale for Teachers

Evaluation Rating	Description	Qualitative Meaning
3	The teaching situation: • is aligned with the specific PPST strand it intends to capture • reflects the real-life experiences of teachers • uses word-appropriate vocabulary	ACCEPTED
2	The teaching situation did NOT satisfy one of the above conditions	NEEDS REVISION
1	The teaching situation did NOT satisfy all of the above conditions	NOT ACCEPTED/ IRRELEVANT

Table 2. Response options for the Efficacy Scale for Teachers

Evaluation Rating	Description	Qualitative Meaning
3	The response options: • is aligned with the specific affective level of the taxonomy that it intends to reflect • reflects the real-life experiences of teachers • uses word-appropriate vocabulary	ACCEPTED

2	The teaching situation did NOT satisfy one or more of the above conditions	NEEDS REVISION
1	The teaching situation did NOT satisfy all of the above conditions	NOT ACCEPTED

Appendix B

Developed Efficacy Scale for Teachers

Purpose. The Efficacy Scale for Teachers assesses a teacher's belief or conviction that he/she possesses the competence to successfully execute behavior or actions to produce the desired outcome. The notion of competence, was contextualize to capture the domains and teaching strands of effective teacher practices specified in the PPST (Department of Education, 2017).

Inventory and Description. The Efficacy Scale for Teachers is composed of 37 situational judgment items that allow a teacher to reflect on his/her personal assessment of competence and to select the strategy or action that he/she believes to be the best means to address the given situation. On the assessment of the teacher's conviction that he/she can successfully handle the given situation, the response scale ranges from 1 (very low) to 5 (very high). Meanwhile, on selecting the action/strategy a teacher believes that can best address the situation, response options were levelled based on the affective response that is most likely to be elicited by a particular action.

Administration Procedures. The Efficacy Scale for Teachers can be answered on the average of 45 minutes to one hour. The instrument can be administered to in-service teachers at the elementary and junior high school levels. In responding to a teacher efficacy item, the teacher must first read and understand the given teaching situations and consider similar situations from his/her own teaching experiences. Based on the assessment of his/her competence as a teacher, he/

she then rates his/her conviction that he/she can handle the given situation on a scale of 1 to 5, with 1 as the lowest (very low) and 5 as the highest (very high). Afterwards, the teacher selects from a set of options the strategy he/she believes to be the best strategy or action to address the given situation.

Scoring Scheme and Interpretation. The Efficacy Scale for Teachers yields two responses – one for the teacher's conviction/belief that he/she possesses the competence to handle the given teaching situation (using a scale of 1 to 5) or what the researcher called the personal efficacy score, and the other for the level of affective response as represented by the option that the teacher most often select as the best strategy to address the given situation.

For illustrative purposes, a set of actual items included in the developed Efficacy Scale for Teachers are provided below:

EFFICACY SCALE FOR TEACHERS

DIRECTIONS:
Read and understand the following teaching situations. Consider similar situations from your own teaching experiences.

Based on your personal assessment of your competence as a teacher, rate your conviction (1 as very low and 5 as very high) that you can handle the situation by placing a check mark (✓) on the appropriate box.

Afterwards, put a check mark (✓) on the appropriate box corresponding to the **BEST** action or strategy that you believe would address the given situation (choose only one response).

BEGIN HERE:

TEACHING SITUATION	RESPONSE
1. You will teach a lesson that will require students to develop an in-depth understanding of the essential concepts and principles.	**I believe I can successfully handle this situation.** Very Low ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Very High **In responding to this situation, I believe the best course of action is to** A ☐ Engage students to work in pairs or in groups as they share their ideas about the lesson B ☐ Let the students watch a short video presentation relevant to the lesson C ☐ Provide students with take home exercises where they can apply what they have learned on their own D ☐ Ask students questions that will probe their existing knowledge of the new lesson E ☐ Get the students take on different roles as they reflect on about the new lesson

2. Your class is already in session but you noticed that other students are rushing at the corridor. Your students are beginning to get out of their seats.	**I believe I can successfully handle this situation.** Very Low ☐1 ☐2 ☐3 ☐4 ☐5 Very High **In responding to this situation, I believe the best course of action is to** A ☐ Provide students with practice exercises they can work on while you are finding out what is really happening outside B ☐ Let the students review the school safety guidelines in responding to this kind of situation C ☐ Let students propose action plans of the safety measures they believe must be implemented to ensure student safety while inside the classroom D ☐ Coordinate with persons of higher authority to be guided on what the class should do in response to the current situation E ☐ Instruct your students to stay calm and wait for your further instructions
3. You want to use effective questioning techniques which is sensitive to gender and student's need.	**I believe I can successfully handle this situation.** Very Low ☐1 ☐2 ☐3 ☐4 ☐5 Very High **In responding to this situation, I believe the best course of action is to** A ☐ Begin the discussion with stories where there are examples of working women, caring fathers, active girls, or creative boys B ☐ Incorporate an inclusive language and consciously call on both male and female students in random to respond to questions C ☐ Encourage open forum discussions that will promote cooperative learning rather than a girls-versus-boys competitive approach D ☐ Let the students reflect on gender-sensitive questions that should be asked during class discussion E ☐ Empower students to draft gender-sensitive questions which they regard as not offensive to them and their peers

4. You want to plan and deliver lessons that are timed and sequenced to meet the needs of the students.	**I believe I can successfully handle this situation.** Very Low ☐ ☐ ☐ ☐ ☐ Very High 1 2 3 4 5 **In responding to this situation, I believe the best course of action is to** A ☐ Orient the students of the details of your lesson plan during the first day of class B ☐ Allow the students to give suggestions on how they want to go about the discussion of a lesson given the allotted time of the subject C ☐ Provide group activities that are time-bounded and would meet needs of students D ☐ Let the students do cross checking of what is done and how much time is remaining at the end of each lesson E ☐ Let the students respond to a learners' need survey and consider the results in finalizing your lesson plan
5. You want to ascertain your students' current knowledge/skills to guide you in making the necessary steps for reaching the desired goals of the subject.	**I believe I can successfully handle this situation.** Very Low ☐ ☐ ☐ ☐ ☐ Very High 1 2 3 4 5 **In responding to this situation, I believe the best course of action is to** A ☐ Let the students respond to an assessment survey that elicits their current knowledge/skills of the subject B ☐ Let the students write a personal identity profile where they can reflect on their current knowledge/skills about the subject C ☐ Provide collaborative activities in pairs or in groups where students can introspect on their current knowledge/skills D ☐ Empower the students in continually examine their current knowledge/skills as part of the requirements of the subject E ☐ Ask questions that would elicit students' current knowledge/skills of the subject

6. You want to draw on resources within the community to enhance lesson/unit content.	**I believe I can successfully handle this situation.** Very Low Very High ☐ ☐ ☐ ☐ ☐ 1 2 3 4 5 **In responding to this situation, I believe the best course of action is to** A ☐ Assign students in pairs or in groups to discuss with each other possible activities that may help the community B ☐ Ask students to identify resources available within their community that can enhance their learning of a certain lesson C ☐ Display samples of community resources inside the classroom to establish awareness among students D ☐ Allow the students to write a letter to the local officials of the community concerning a topic of interest that is relevant to the lesson E ☐ Involve the students in community outreach program or socio-civic activity where they can actually apply the topics they learn in the classroom
7. You want to model an enthusiastic and passionate attitude towards teaching and learning.	**I believe I can successfully handle this situation.** Very Low Very High ☐ ☐ ☐ ☐ ☐ 1 2 3 4 5 **In responding to this situation, I believe the best course of action is to** A ☐ Think about how in my teaching you can show my enthusiasm and passion for the subject with my students B ☐ List down the behavior of enthusiastic and passionate teachers I know C ☐ Exhibit a deep commitment to model enthusiastic and positive attitude towards teaching at all times D ☐ Work in partnership with students as I manifest your passion and enthusiasm in teaching E ☐ Find ways of figuring out what enthusiasm and passion in teaching is all about and how teachers can cultivate the attitude as a teaching disposition