



Exploring Filipino Teacher Education Students' Conceptions of Teaching and Learning

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Abstract The present study explored the conceptions of teaching and learning of 654 Filipino teacher education students from two public universities in the National Capital Region (NCR), Philippines. They were asked to indicate their agreement on statements from the Conception of Teaching and Learning Questionnaire (CTLQ) and their responses were analyzed using exploratory and confirmatory factor analyses. A four-factor structure of conceptions of teaching and learning emerged from the data analysis, consistent with previous research indicating the unidimensionality of the constructivist conception and the multidimensionality of the traditional conception. The descriptive statistics suggest that the Filipino teacher education students tend to hold a constructivist conception of the nature and process of teaching and learning, but also tend to hold the traditional conception that knowledge is transmitted by teachers and that learning refers to the retention of knowledge.

Keywords: conceptions of teaching and learning, constructivist conception, traditional conception, teacher education students, Philippines

An important dimension to the concept of quality teaching and learning in the classroom is how teachers and students conceive of the nature and process of teaching and learning. One important set of beliefs or cognitions that teachers hold is their conceptions of teaching and learning, defined as the beliefs on how teaching and learning should be conducted, including the meaning of teaching and learning and the roles of teacher and students (Chan & Elliot, 2004). Such teachers' conceptions are relevant in the classrooms as the teachers' thoughts and beliefs are said to be integral aspects of successful teaching (Bustos-Orosa, 2008). Teachers' conceptions of teaching and learning may shape their choices and behaviours in the classrooms, including their approaches to instruction and assessment. For these reasons, a number of

research focused on teacher's conceptions of teaching and learning (e.g., Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001; Samuelowicz & Bain, 2001).

However, our understanding of the cognitions that shape teachers' teaching behaviours may also be enhanced by looking at the relevant conceptions of teacher education students. Understanding the cognitions of these students is important as teacher education students may bring their conceptions of teaching and learning in their classrooms when they become teachers. Since teachers who hold certain conceptions of teaching are more likely to adopt an approach to teaching consistent with those conceptions (Trigwell & Prosser, 1996), the teacher education students' conceptions on teaching and learning figure as important cognitions that may affect their pre-service and in-service pedagogical orientations. Hence, teacher education students' conceptions of teaching and learning are important cognitions that must also be identified and understood as they may have important consequences to teacher education students' motivation and behaviour, especially in terms of instruction and assessment practices.

Investigating the conceptions of teaching and learning among teacher education students in the Philippines seems relevant as the educational system in the country is at the precipice of a major reform due to the implementation of the K+12 program which shifts the country's educational system from 10 years of basic education to 12 years. This shift in paradigm, policy, and practice in the educational system of the Philippines calls for reforms in both basic education and higher education of the country. As a consequence, teacher education institutions that are tasked to train in-service and pre-service teachers are also expected to undergo major reforms to meet the demands of the K+12 program. One important endeavour is determining Filipino teacher education students' conceptions on the teaching-learning process as these cognitions may provide essential information on whether these future teachers hold conceptions that may promote effective and efficient facilitation of student learning, especially in light of the demand of the new educational system. Thus, the current study aims to investigate Filipino teacher education students' conceptions of teaching and learning, specifically focusing on examining their endorsement of traditional and constructivist conceptions of teaching and learning. The traditional conception views "teaching as an act of transmitting knowledge from authoritative sources such as the teachers or the textbooks to the students who assume the role of passive recipients" (Teo & Chai, 2008, p. 215), while the constructivist conception emphasizes the "creation of active learning environments that permit critical thinking, discovery, and collaboration" (Chan & Elliot, 2004, p. 819).

Examining the conceptions of teaching and learning among teacher education students has been the focus of some recent research in Asia (e.g. Cheng, Chan, Tang, & Cheng, 2009; Teo & Chai, 2008). To advance the inquiry on the conceptions of teaching and learning among teacher education students, Chan (2001) developed the *Conception about Teaching and Learning*

Questionnaire (CTLQ; Chan, 2001) to measure *traditional conception* and *constructivist conception* of teaching and learning. Using survey data from a sample of teacher education students in Hong Kong, exploratory factor analysis provided support to the two-factor structure of conceptions of teaching and learning. The two-factor structure of conceptions of teaching and learning was also validated in other samples of Hong Kong teacher education students (Chan & Elliot, 2004; Cheng, et al. 2009).

To validate the two-factor structure of conceptions of teaching and learning in a sample outside of Hong Kong, Chan, Tan, & Khoo (2007) administered the CTLQ with a sample of teacher education students in Singapore and results provided support to the two-factor structure. However, using data from another sample of teacher education students in Singapore, Teo and Chai (2008) were able to show that the two-factor structure of conceptions of teaching and learning was limited as confirmatory factor analysis of the samples' responses on the CTLQ did not support the two-factor structure proposed by Chan (2001). Moreover, a follow-up exploratory factor analysis and second confirmatory factor analysis of the data from their samples provided support to a five-factor solution where the constructivist conception was retained and the traditional conception was separated into four factors: *teacher-centered teaching*, *directive teaching*, *transmissive teaching*, and *rote teaching*. The results indicating that the traditional conception of teaching and learning is multidimensional were also supported in a more recent study with another sample of Hong Kong teacher education students (Wong & Lo, 2012). Examining the convergent and discriminant validity of the CTLQ, Wong and Lo (2012) demonstrated that a four-factor solution of conceptions on teaching and learning is most suitable. These four factors are: *constructivist conception*, *teaching as transmission of knowledge*, *control of teacher over students*, and *teacher as authority on knowledge*.

The conflicting results discussed in the preceding paragraph strongly suggest the need to examine Filipino teacher education students' conceptions of teaching and learning. It seems important to identify the dimensions of these conceptions among Filipino teacher education students and determine how similar and different their conceptions of teaching and learning compared with the samples from the other Asian countries. Even if the studies on the conceptions of teaching and learning among Asian teacher education students showed consistency across samples, it may not be safe to assume that similar patterns of results will hold true among Filipino teacher education students. Our review of literature suggests that there has been no empirical examination yet on the conceptions of teaching and learning of Filipino teacher education students. One related study is the research of Bernardo (2008) which explored the epistemological beliefs of a sample of Filipino teacher education students. However, epistemological beliefs are broad beliefs about knowledge and learning and are conceptually different with conceptions of teaching and learning.

There are also studies that examined how conceptions of teaching and

learning are associated with important learning and achievement-related variables. For example, the relation of conceptions of teaching and learning with beliefs about knowledge and learning or epistemological beliefs were investigated among Hong Kong teacher education students and results from canonical analysis revealed significant relations between epistemological beliefs and conceptions about teaching and learning (Chan, 20004). A related study was conducted by Chan and Elliot (2004) and their results point to the influence of teacher education students' epistemological beliefs on their conceptions of teaching and learning. It was also previously asserted that students' conceptions of learning may be related to their approaches to studying in higher education (Richardson, 2011), which is consistent with the notion that personal beliefs may affect one's motivation to engage and persist in achievement-related behaviors (Shell & Husman, 2008).

Given the importance of determining teacher education students' conceptions of teaching and learning, we aimed to explore and describe Filipino teacher education students' conceptions of teaching and learning. Besides determining the structures or dimensions of the conceptions of teaching and learning of Filipino teacher education students, we also aimed to determine if Filipino teacher education students hold more traditional or more constructivist conceptions. Previous researches have shown that Filipino teachers' classroom practices tend to be more traditional (De Mesa & De Guzman, 2006) and that Filipino teacher education students tend to believe that learning is a simple and unsophisticated process (Bernardo, 2008). The aforementioned findings seem to suggest that Filipino teachers and teacher education students may be more inclined to adopt traditional conceptions of teaching and learning. The present study, explored the conceptions of teaching and learning of a sample of Filipino teacher education students from the Philippines using the CTLQ (Chan, 2001).

Method

Participants and procedure

A total of 654 third-year and fourth-year undergraduate teacher education students from two public universities in the National Capital Region (NCR) of the Philippines participated in the study. The two universities have the largest population of students enrolled in teacher education students in the NCR. There were 492 (75.20%) female participants, 161 (24.60%) male participants, and one who did not indicate his/her gender. The participants' ages range from 17 to 36 years ($M = 18.88$ years; $SD = 1.64$). Participants completed the questionnaire on conceptions of teaching and learning during their classroom hours through the assistance of institutional coordinators who served as proctors during the administration of the questionnaire.

Instrument

The participants' conceptions of teaching and learning were assessed with items from the CTLQ (Chan, 2001). The CTLQ contains 30 statements that refer to two broad categories of conceptions of teaching and learning: (1) traditional and (2) constructivist conceptions of teaching and learning. The participants were asked to indicate whether they agree or disagree with each statement in the questionnaire, using a scale from 1 (strongly disagree) to 5 (strongly agree). The questionnaire given to the participants also contained items on the participants' demographic information (e.g. age, gender).

Results

Exploratory Factor Analysis

To explore the structure of the teacher education students' conceptions of teaching and learning, the participants' responses in the CTLQ were analyzed using exploratory factor analysis (EFA). EFA is a factor analytic method used to gain insights into the structure of a collection of a set of variables (Pohlmann, 2004). Data from about half of the participants ($N = 330$) were randomly selected and used in this analysis. The obtained Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .826 and the obtained Bartlett's Test of Sphericity was significant ($p < .001$), suggesting that the data from the participants' responses are suitable for factor analysis. The correlation matrix of the data was then analyzed using principal axis factoring with oblimin rotation. Adopting the logic of the analysis used by Wo and Lo (2012), principal axis factoring was used because it is a true method of factor analysis and the multivariate normality of the data in the study cannot be assumed, whereas oblimin rotation was used because oblique rotation methods like oblimin are more appropriate when there is reason to believe that the underlying dimensions or factors are correlated. Using the Guttman-Kaiser criterion (eigenvalues > 1.0), eight factors were identified from the EFA, but the scree plot suggested two big factors and two small factors. Hence, a series of EFA was run to examine factor solutions of four to eight factors. We concluded that a four-factor solution which accounted for 44% of the variance in the data provided the optimal solution because: (a) it was consistent with the scree plot, (b) it had the least number of items with weak factor loading or cross-loading, (c) all factors have at least three items, and (d) the factor loading of the items was theoretically meaningful. In terms of the factor loadings, only items with loading of at least .40 in one factor and not more than .35 in another factor were considered.

The items that loaded significantly in one of the four identified factors were then examined in terms of the core ideas and central themes that they represent. The items in Factor 1 (eigenvalue = 5.74; % of variance = 19.12) refer to conceptions that teaching and learning should be teacher-centered,

wherein teachers are the authority and provider of knowledge while students are passive recipients of knowledge who should not question the teacher's authority and knowledge. Sample items that loaded into this factor are 'Good teaching occurs when there is mostly teacher talk in the classroom' and 'Learning to teach simply means practicing the ideas from lecturers without questioning them.' Hence, Factor 1 is labeled as *Teacher as Knowledge Expert* (TKE).

In contrast, the items in Factor 2 (eigenvalue = 3.60; % of variance = 12.00) generally refer to a constructivist conception of teaching and learning. These items put emphasis on the need to consider individual differences in learning and assert the capability of students to think and actively engage in construction of knowledge or ideas through the guidance and facilitation of teachers. Sample items that loaded in this factor are 'The ideas of students are important and should be carefully considered' and 'Every child is unique or special and deserves an education tailored to his or her particular needs.' Factor 2 is labeled as *Constructivist Conceptions* (CC).

On the other hand, the items in Factor 3 (eigenvalue = 2.15; % of variance = 7.17) refers to the conception that teaching is basically the transmission of knowledge from teachers to students where the quantity of knowledge absorbed and recalled serve as the evidence that learning occurred. Sample items in this factor are 'Learning mainly involves absorbing as much information as possible' and 'The major role of teachers is to transmit knowledge to students.' Factor 3 is labeled as *Knowledge Transmission and Retention* (KTR).

Lastly, the items in Factor 4 (eigenvalue = 1.64; % of variance = 5.45) pertains to the need for teachers to control their classes and students in order for teaching and learning to happen. Sample items in this factor are 'It is best if teachers exercise as much authority as possible in the classroom' and 'No learning can take place unless students are controlled.' As such, Factor 4 is labeled as *Control of Learner* (CL). The correlations between the four factors were also examined and a more stringent criterion ($p < .01$) in interpreting the significance of the correlation was adopted to avoid reporting trivial effects. The correlation between the factors ranged from low to negligible. The descriptive statistics and internal consistency (Cronbach's alpha) of the four factors are displayed in Table 1.

Table 1
Descriptive Statistics and Internal Consistencies for the EFA Data

Factor	Item	<i>a</i>	<i>M</i>	<i>SD</i>	1	2	3
1 Teacher as Knowledge Expert	6	.84	2.54	.75	–		
2 Constructivist Conception	9	.74	4.54	.33	-.04	–	
3 Knowledge Transmission and Retention	6	.82	3.83	.65	.33*	.15*	–
4 Control of Learner	5	.75	3.21	.71	.40*	-.02	.40*

* $p < .01$

Confirmatory Factor Analysis

In order to validate the four-factor structure of the participants' conceptions of teaching and learning, a confirmatory factor analysis (CFA) was conducted using data from the remaining participants of the study ($N = 324$). CFA is used in testing a priori hypotheses on the relations between observed variables and latent variables (Jackson, Gilasspy, Jr., & Purc-Stephenson, 2009). Through the CFA, the validity of the four-factor structure of the conceptions of teaching and learning among Filipino teacher education students was examined. Prior to the conduct of CFA, the internal consistency of the items in each of the four factors was examined using Cronbach's alpha. Results revealed that one item under Constructivist Conception had very poor item-total correlation (.009) and was removed from the analysis. The correlations between the factors ranged from negligible to moderately high. The descriptive statistics and Cronbach's alpha values are shown in Table 2.

Table 2
Descriptive Statistics and Internal Consistencies for the CFA Data

Factor	Item	<i>a</i>	<i>M</i>	<i>SD</i>	1	2	3
1 Teacher as Knowledge Expert	6	.87	2.78	.79	–		
2 Constructivist Conception	8	.74	4.52	.35	-.04	–	
3 Knowledge Transmission and Retention	6	.84	3.84	.70	.46*	.14*	–
4 Control of Learner	5	.80	3.37	.75	.61*	.11	.59*

* $p < .01$

In the CFA, the four factors identified from the EFA were modelled as latent variables and the items that loaded in each factor were used as observed variables or indicators of the four latent variables. CFA was then performed on the data using a covariance matrix through maximum likelihood estimation

(MLE). To determine the fit of the data, multiple indices were examined and the following criteria were used: chi-square (χ^2) should not be significant and the ratio of chi-square to degrees of freedom (χ^2/df) should be 3.0 or less (Hoe, 2008), the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) should not be lower than .90 (Browne & Cudeck, 1993), and the root mean square error of approximation (RMSEA) should not be higher than .08 (Browne & Cudeck, 1993; Hu & Bentler, 1999). The results of the CFA indicate an adequate fit of the four-factor structure with the data across all fit indices, except for the chi-square : χ^2 (269, N= 324) = 508.382; $p < 0.001$; $\chi^2/df = 1.89$; CFI = .92; TLI = .91; RMSEA = 0.052.

In terms of the convergent validity of the four-factor structure, the obtained average variance extracted (AVE) values were less than satisfactory as only one factor met the recommended guideline for adequate AVE ($\geq .50$). Nevertheless, the standardized factor loadings range from .34 to .80 and the composite reliability (CR) of each factor ranges from .75 to .87, providing some support for the convergent validity of the four-factor structure. In terms of discriminant validity, the obtained maximum shared variance (MSV) for the three factors (F1, F3, F4) were higher than their respective AVE, indicating unsatisfactory discriminant validity on these factors. It is possible that the three factors reflective of traditional conceptions of teaching and learning are not entirely distinct from each other. However, the obtained average shared variance (ASV) for all four factors are all lower than their respective AVE, providing some support to the discriminant validity of the four-factor structures. Given that the inter-factor correlations ranged from low to moderate, there is some support to the assumption that the four factors are distinct and separate dimensions of conceptions of teaching and learning.

Given the mixed results of the analysis of the convergent and divergent validity of the four-factor structure of the conceptions of teaching and learning, a two-factor structure was examined. First, all items from the three factors that represent more traditional conceptions of teaching and learning (TKE, KTR, and CL) were combined to form one factor representing the traditional conception of teaching and learning, while the factor on constructivist conception of teaching and learning was retained. Next, CFA analysis was performed on the two-factor structure. The results of the CFA indicate a poor fit of the data to the two-factor structure with: χ^2 (274, N= 324) = 969.645; $p < 0.001$; $\chi^2/df = 3.54$; CFI = .76; TLI = .73; RMSEA = .089. Across all fit indices, the four-factor structure indicated superior structural validity over the two-factor structure. Thus, in spite of some inconsistencies in the results of the convergent and divergent validity analyses, the CFA provided adequate support to the validity of the four-factor structure of conceptions of teaching and learning among the sample of Filipino teacher education students in the study.

Discussion

The purpose of the present study was to explore the conceptions of teaching and learning of a sample of Filipino teacher education students in the Philippines. While the results of the study are preliminary, the present study yielded significant information that provides some definition and description of the conceptions of teaching and learning among Filipino teacher education students. One of the significant findings of the study pertains to the results that support the unidimensionality of the constructivist conception of teaching and learning and the multidimensionality of the traditional conception of teaching and learning. These results were in consonance with the findings of Teo and Chai (2008) and Wong and Lo (2012) that constructivist conception is unidimensional, whereas traditional conception is more complex and multidimensional in structure. In addition, the four-factor structure that emerged from the present study was identical with the four-factor structure identified by Wong and Lo (2012). This provides some evidence that the conceptions of teaching and learning of Filipino and Hong Kong teacher education students may share some similarities in terms of dimensions or structures. However, cross-country studies would be needed to further investigate such possibility. Indeed, it may be important to examine if students from one country like the Philippines hold stronger traditional or constructivist conceptions compared with students from other countries.

Descriptive statistics from both the EFA and CFA provided preliminary evidence that Filipino teacher education students in the present study tend to hold a more constructivist conceptions of teaching and learning (CC). To a lesser extent, they also tend to hold conceptions that knowledge should be transmitted by teachers and that student learning occur through retention (KTR). The results of the correlation analysis also suggest that students who have constructivist conceptions of teaching and learning are more likely to hold conceptions that emphasize knowledge transmission and retention. These results provide preliminary evidence that Filipino teacher education students are inclined to adopt or endorse both constructivist and traditional conceptions of teaching and learning, at least in terms of the belief that knowledge is transmitted by teachers and should be retained as evidence of learning. In other words, the Filipino teacher education students in the present study seem to have a constructivist-oriented conception of teaching and learning but still hold the view that learning is about knowledge transmission and retention. This seems to paint a more integrated set of cognitions on the nature and process of teaching and learning among the teacher education students in the present study. This finding is consistent with the observation that teachers' view of teaching and learning is are likely to be eclectic (Teo & Chai, 2008).

On the other hand, descriptive statistics also suggest that the Filipino teacher education students in the present study tend to have less endorsement of the conceptions that teachers are knowledge experts that should act as authority in the classroom (TKE), and who must the control the learners and

the learning environment for learning to occur (CL). Moreover, the results suggest that the CL conception is the least favorably endorsed by the Filipino teacher education students. In both the EFA and CFA data, the mean scores on CL conception were below the midpoint. These results seem to suggest that while the Filipino teacher education students in the study hold relatively strong KTR conceptions, they are less inclined to hold TKE, and especially, CL conceptions. One may argue that the strong constructivist conception of the participants in the study allowed them to de-emphasize the conceptions that teachers must control the students and that teachers are the experts that must direct or dominate the teaching-learning process in the classroom. But the participants' relatively strong preference to the KTR conception, as well as the positive association of KTR with CC, suggest that they have yet to fully adopt a constructivist orientation of teaching and learning.

Given the findings of the present study, it seems important to find out what factors or contexts shape or develop such conceptions of teaching and learning among Filipino teacher education students. One may speculate that the teacher education students' conceptions were shaped by their experiences during their elementary and secondary education. For example, they may have experienced assessment practices that encourage rote learning and surface learning in the classroom level (e.g. quiz, exam), as well as in the institutional and the national level (e.g. National Achievement Test). These experiences may have shaped the belief that teachers need to ascertain that their students are given the knowledge they needed to pass such assessments, and emphasized the need for students to retain the knowledge acquired.

One may also speculate that the results that point to a more eclectic view of teaching and learning (i.e. CC and KTR) can somehow be attributed to the instruction and assessment practices in Philippine schools. It may be argued that while teacher education institutions are already promoting constructivist teaching and learning in their classrooms, the teacher educators themselves may still be practicing more traditional approaches in teaching. For example, a teacher education professor who is teaching students the advantages of a learner-centered classroom over a teacher-centered classroom may be promoting both constructivist and traditional orientations if the lessons are delivered through lecture and teacher-dominated discussion. Thus, the teacher education students may be experiencing some dissonance between what they learn theoretically from their teachers and what they observe and learn in terms of teachers' actual teaching practices. It may also be plausible that teacher education students may have dissonance between what they think teaching and learning is based on what they learn from their training, and what they think teaching and learning is based on their experiences as students and as pre-service teachers. If the educational system or the culture demands teachers to integrate or incorporate teacher-centered learning (traditional) and learner-centered learning (constructivist), then mixed conceptions (combined traditional and constructivist orientations) on the nature and process of learning would seem acceptable, or even warranted.

At this point, it would be important to be reminded that the present study has limitations so the findings should be interpreted with caution. First, a self-report questionnaire to examine the conceptions of teaching and learning of Filipino teacher education students was used. While the results showed that the instrument used, CTLQ, is valid and reliable, it may be important to inquire on Filipino teacher education students' conceptions of teaching and learning through a qualitative investigation or through the use of another survey instrument that could possibly identify dimensions of structures of conceptions of teaching and learning that were not captured by the instrument used. Second, the sample for the study was drawn from only two universities in Manila. While there seems to be no strong reason to believe that teacher education students' conceptions of teaching and learning may vary as a function of the institution, there is a need to confirm or replicate the findings of the study with more representative sample of teacher education students in the country before one can make stronger generalizations from the findings. Nonetheless, in spite of the aforementioned limitations, the current study yielded interesting results that provide some preliminary evidence on the dimensions or structures of Filipino teacher education students' conceptions of teaching and learning. Apart from what have been discussed thus far, future research could also include comparative studies of in-service and pre-service teachers to determine if their conceptions on the nature and process of teaching and learning are identical or different. Perhaps, a longitudinal study that would investigate the development of these conceptions of teaching and learning from teachers' pre-service training to their in-service years can also be conducted in order to understand the process of the development of these conceptions. Theoretical models that would hypothesize and test various antecedent and consequent variables of traditional and constructivist conceptions of teaching and learning would also be important, especially in terms of determining the role of these conceptions on teachers' adoption of more effective instruction and assessment practices and their impacts on students' learning and achievement.

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