Measurement Model of Professional Learning Community: A Malaysian Teacher Context

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Abstract

The main purpose of the study was to develop an empirical empirically measurement model for Professional Learning Community (PLC) among teachers in Malaysia primary schools. Structural Equation Modelling (SEM) utilizing AMOS Version 22 was employed to develop the model. Exploratory Factor Analysis (EFA) was utilized to identify the underlying factors, whereas confirmatory factor analysis was employed to test the construct of the PLC. The study involved 450 primary school teachers from 5 zones in Malaysia represented by the states of Kedah, Selangor, Johor, Terengganu and Sarawak. Professional Learning Community Model (PLC) was found to be fit and reliable model with all fit statistics set well above the threshold level. The finding has also encouraged a fresh look at the implementation of PLC program aimed at successful change in schools. The findings of the PLC will also benefit educational practitioners in designing a teacher professional development.

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Introduction

Teachers are the agents of change for student achievement and school improvement. One strategic way to improving schools is fostering and promoting professional learning in which teachers develop their practice and build learning communities (Ho, Lee, & Teng, 2016). Educators can gathering and composed to help instructional activity inquire about that points and focuses at fruitful the nature of instructing readiness (Vanderlinde & Van Braak, 2010). Numerous researchers have conceptualized every one of these practices as PLCs. Meanwhile, Malaysian Continuous Professional Development (CPD) for teachers clearly stated the PLC programme should be conducted in school to improve the quality and performance (Ministry of Education, 2014). Indeed, PLC is an initiative and trend to improve quality of teachers, student achievement, and professional development among developed country (Chichibu, 2013; Dufour & Mattos, 2013; Pektas, 2014).

Indeed, the idea of PLC at first risen up out of the possibility of the teachers proficient group which can be followed back to the 1980s. Later, another organizational feature, called organizational learning was added to the concept of a professional community, resulting in the coining of the term PLC (Senge, 1990). Successful implementations of PLCs enable schools to effectively address some of the problems that education in the twenty-first century faces.

For instance, availability of effective professional learning communities is found to be a considerable driving force for building teacher and school capacity which is correlated with improved achievement for all students (Youngs & King, 2001). Meanwhile, through PLCs, teachers are provided with an access to resources with the learning opportunities, which are necessary to restructure learning environments to meet the educational prerequisites of their increasingly diverse students. Thus, there is not much knowledge regarding current status of PLC and factors associated with its practices in Malaysia primary school context. This study, therefore, aims to assess PLC capability of Malaysia primary schools and explore factors and create the model that explain PLC model among Malaysian primary teachers.

Literature Review

Shirley Hord's (1997) model of PLC is based into school improvement and school reform. Her work with the Creating Communities of Continuous Inquiry and Improvement (CCCII) project, which began in the mid-1990's, gave rise to learning more about promoting and nurturing learning communities (Hord, 1997). Hord also draws upon Senge's learning organization theory in her work with professional learning communities. According to Hord, there are five scopes or dimensions of a professional learning community: i) supportive and shared leadership, ii) shared values and vision, iii) collective learning and application of learning, iv)supportive conditions, and v) shared practice.

Supportive and shared leadership

The school reform and educational leadership literatures clearly identify the role and inspiration of the educational administrator on whether reform will occur in the school. It appears to be certain that changing a school association into a learning group should be possible just with the pioneers and the dynamic sustaining of the whole staff's change as a

group. Thus, a look at the educational leader of a school whose staff is a professional learning community seems a good starting point for relating what these learning communities look like and how the educational administrator or principal accepts a collegial relationship with teachers. This new relationship produced amongst overseers and teachers prompts shared and collegial administration in the school, where all develop professionally and figure out how to see themselves as all playing on a similar group and utilized toward a similar objective: a superior school (Hoer, 1996; Hord, 1997).

Shared values and vision

Vision is a trite term these days, and at many times it refers to mission, purpose, goals, objectives, or a paper sheet posted near the principal's office (Isaacson & Bamburg, 1992). Sharing vision is not recently affirming with a smart thought; it is a particular mental picture of what is critical to an individual and to an organization. Staff are urged not exclusively to be required in the method of building up a mutual vision, but to utilize that thought as a guidepost in leadership of educating and learning in the school (Hord, 1997).

Collective learning and application of learning

Collective Learning is form Senge's paradigm shift was discovered by educators and shared in educational journals, the label became learning communities. In schools, the learning group is shown by people from various voting demographics, at all levels, cooperatively and constantly working and adapting together (Hord, 1997; Louis & Kruse, 1995).

Supportive conditions

Supportive conditions control when and where and how the staff frequently comes together as a unit to do the learning, decision making, problem solving, and creative work that describe a professional learning community. There is two types of conditions are necessary for learning communities to create function productively: the physical or organizational setup and the human capacities of the people involved (Hord, 1997; Louis & Kruse, 1995).

Shared practice

Shared practice is shared personal practice among colleagues. Review of a teacher's behavior by colleagues is the norm in the professional learning community (Louis & Kruse, 1995). This activity is not evaluative but is part of the "peers helping peers" practice. Such review is conducted frequently by teachers, who visit each other's classrooms to observe, script notes, and discuss their observations with the visited peer. The process is based on the desire for individual and community enhancement and is enabled by the mutual respect and trustworthiness of staff members (Hord, 1997).

Methods

A quantitative approach with a survey research design was chosen for this study because the intent is to ask narrow objective questions generating quantifiable data that can be analysed using statistics (Cresswell, 2008). The target respondents are among all the

primary school teacher in Malaysia. The samples were selected using the multistage cluster sampling techniques. The study involved 450 primary school teachers from five zone areas of Malaysia represented by the states of Kedah, Selangor, Johor, Terengganu and Sarawak. This sample saiz achieve the minimum sample saiz according to Krejcie & Morgan (Krejcie & Morgan, 1970). There is 112 (18.3%) from Kedah, 163 (26.6%) from Selangor, 114 (16.5%) from Terengganu, 101 (18.6%) from Johor and 122 (19.9%) from Sarawak.

The measurement instrument

The instrument is adapt and modification from of the PLCA-R (Olivier, Hipp, & Huffman, 2010). Previous studies on the PLCA-R have gone through construct validity and have yielded satisfactory internal consistency for the subscales of the PLCA-R (Olivier, Hipp, & Huffman, 2010). The adaption and modification questionnaire consists of 52 items and five subscales: shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, and supportive conditions. The questionnaire as shown as appendix.

Modelling professional learning community

Five distinct approaches were applied to ensure the development and modelling PLC. First, the PLC was initially peer reviewed by the teachers and supervisors after systematically literature review. Second, ten face-to-face discussions with the expert including academician and practitioner. In fact, each subsequent instrument was constructed based on the preceding instrument. Some of the items were modified and redrafted based on the outcome of each discussion so as to ensure their precision and clarity. Third, a pilot study was conducted in order to assess the internal consistency reliability (Cronbach's alpha), and EFA procedure to explore the factor. Forth, a field study was conducted to run CFA, convergent validity and discriminant validity. Finally, this model successfully developed through all of the procedure.

Normality

Prior to analysing the data, descriptive statistics were examined to check the normality of PLC model. Normally, the data should be conducted to investigate how the standard of the data collected so that the developing model suits the parametric technique in the future research. Using Skewness and Kurtosis approach, our data is claimed to be highly significant indicating as normal data. Each item is ranging between -2 to +2 (Garson, 2012).

Table 1. *Multivariate normality*

Variable	min	max	Skew	c.r.	kurtosis	c.r.
Cd4	4.000	10.000	**-.285**	-2.468	**1.338**	5.796
Cd7	4.000	10.000	**-.290**	-2.516	**1.324**	5.732
Cd6	4.000	10.000	**-.232**	-2.009	**.816**	3.533
Cd3	4.000	10.000	**-.019**	-.163	**.354**	1.531
Cc7	4.000	10.000	**.019**	.164	**.919**	3.979
Cc4	4.000	10.000	**-.015**	-.128	**.210**	.909

Variable	min	max	Skew	c.r.	kurtosis	c.r.
Cc6	4.000	10.000	**.003**	.029	**.602**	2.608
Cc5	4.000	10.000	**-.321**	-2.778	**.842**	3.644
Cf2	4.000	10.000	**-.231**	-2.003	**.435**	1.882
Cf1	4.000	10.000	**-.441**	-3.820	**1.038**	4.494
Cf3	4.000	10.000	**-.466**	-4.039	**1.468**	6.355
Cf4	2.000	10.000	**-.679**	-5.883	**.391**	1.695
Cf5	2.000	10.000	**-.696**	-6.031	**.839**	3.631
Cf6	2.000	10.000	**-.692**	-5.993	**.582**	2.520
Ca6	2.000	10.000	**-.280**	-2.427	**1.957**	8.473
Ca4	4.000	10.000	**-.392**	-3.391	**1.368**	5.924
Ca9	4.000	10.000	**-.221**	-1.915	**.800**	3.464
Ca1	4.000	10.000	**-.892**	-7.722	**1.210**	5.238
Ca7	2.000	10.000	**-.467**	-4.044	**1.594**	6.902
Ca5	4.000	10.000	**-.475**	-4.113	**1.367**	5.918
Ca8	6.000	10.000	**.083**	.722	**-.162**	-.702
Cb5	4.000	10.000	**.118**	1.024	**-.054**	-.235
Cb6	4.000	10.000	**-.010**	-.090	**.126**	.547
Cb9	6.000	10.000	**.118**	1.022	**-.819**	-3.545
Cb8	6.000	10.000	**-.020**	-.173	**-.793**	-3.433
Cb2	6.000	10.000	**.166**	1.440	**-.764**	-3.308
Cb7	6.000	10.000	**.346**	2.995	**-1.027**	-4.446
Cb4	4.000	10.000	**.039**	.337	**-.059**	-.257
Cb3	4.000	10.000	**-.017**	-.150	**-.262**	-1.136
Multivariate					**474.695**	114.905

Convergent validity

The convergent validity is the validation processes on measurement model. According to Kline (2011), convergent validity is a set of items in one construct are inter-correlation, at least, moderate in magnitude and is measured through average variance extracted (AVE) where the threshold is above >0.5 indicates a high convergent validity (Fornell & Larcker, 1981). Factor loading of each item at ≥ 0.6 considered high convergent validity (Hair et al., 2010). Table 2 showed all the AVE and factor loading achieved the minimum value for convergent validity.

Table 2. *Factor loading, AVE, CR and √AVE*

Item	Factors	Factor Loading (>0.6)	AVE(>0.5)	CR(> 0.6)	√AVE
Ca1	**Supportive and Shared Leadership**	0.715	0.720	0.959	0.848
Ca2		0.813			

Ca4		0.859			
Ca5		0.915			
Ca6		0.879			
Ca7		0.899			
Ca8		0.844			
Ca9		0.837			
Cb2	**Shared Values and Vision**	0.866	0.757	0.965	0.870
Cb3		0.906			
Cb4		0.896			
Cb5		0.906			
Cb6		0.819			
Cb7		0.891			
Cb8		0.8			
Cb9		0.808			
Cc4	**Collective Learning and Application of Learning**	0.795	0.697	0.902	0.824
Cc5		0.793			
Cc6		0.894			
Cc7		0.852			
Cd3	**Shared Practice**	0.791	0.687	0.897	0.828
Cd4		0.831			
Cd6		0.831			
Cd7		0.86			
Cf1	**Supportive Condition**	0.829	0.588	0.894	0.766
Cf2		0.867			
Cf3		0.82			
Cf4		0.697			
Cf5		0.682			
Cf6		0.682			

Discriminant validity

Table 3 showed that the diagonal value (in bold) are higher than any other values in its row and column. Thus, the discriminant validity for the PLC constructs was achieved. The discriminant validity is to avoid any redundant items in the measurement model (Zainudin, 2012). The items should not be related are in reality not related. It involves the relationship between a latent construct and other constructs of a similar nature. Discriminant validity can be identified by comparing the variance shared by the average AVE between these two constructs (Bove, Pervan, Beatty, & Shiu, 2009).

Table 3. *Discriminant validity*

Supportive and shared leadership	Shared Value and Vision	Collective Learning and Application of learning	Shared Practice	Supportive Condition
0.848				
0.66	**0.870**			

0.64	0.77	**0.824**		
0.62	0.70	0.72	**0.828**	
0.62	0.65	0.70	0.63	**0.766**

Measurement model of the PLC

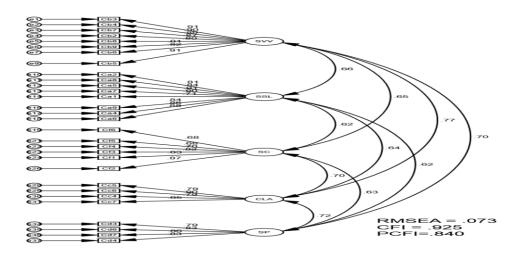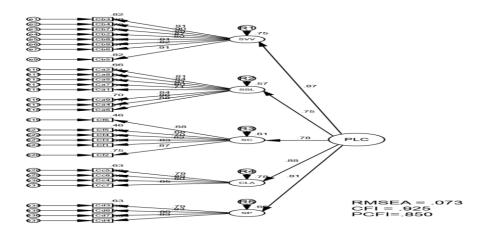**Figure 1.** *1st order CFA*

Figure 2. *2nd order CFA*

Notes: SVV: Shared Values and Vision, SSL: Supportive and Shared Leadership, SC: Supportive Condition, CLA: Collective Learning and Application of Learning, SC: Supportive Condition

Fitness indexes

In SEM, there is several Fitness Indexes that reflect how fit is the model to the data at hand. However there is no agreement among researchers which fitness indexes to use. Hair et al. (2010) and Holmes-Smith (2006) recommend the use of at least one fitness index

from each category of model fit. There are three model fit categories namely Absolute Fit, Incremental Fit, and Parsimonious Fit. The value of fitness indexes used in this study is the RMSEA (absolute), CFI (relative), and PCFI (parsimonious) and this model was achieved the model indexes.

Table 4. *Model fitness indexes*

Model Fitness Indexes	Findings
RMSEA < 0.1	0.073
CFI > 0.9	0.925
PCFI > 0.5	0.850

Findings and Discussion

Finally PLC's model successful developed empirically. The findings have explored and confirm factor structure of PLC. It is revealed all dimensions of the PLC, such as Supportive and shared leadership, Shared Value and Vision, Collective Learning and Application of learning, Shared Practice and Supportive Condition in Malaysian context. In reality, there are the challenges for PLC implementation such as: 1) teachers' workload, 2) ambiguity of PLC processes and effectiveness, and 3) hierarchical work structure (Hairon & Dimmock, 2012). But with the suitable model, PLC implementation should be structured and effective.

Factor supportive and shared leadership has their own capacity. Supportive leadership is compulsory to create an atmosphere in which leadership capacity is developed for all community members. Shared leadership capacity empowers all members of PLC to share in the vision and mission of the school and make effective and real decisions that positively affect student learning and achievement. Factor Shared Value and Vision is connected by mission, focus, goals. A shared sense of the vision and goals of a learning community is assembled by its members, embedded in daily practice and visible to all. Such vision, focus and goals are woven into the fabric of school and community life and are centred on the enhancement of student achievement, learning and growth.

Meanwhile, factor Collective Learning and Application of Learning is about collaborative relationships within the school community. There are centered on developing informed decision making and a knowledge base that positively influences practice. It emphasizes the cognitive processes that result from effective PLCs and the significance of working collectively with curricular outcomes, instructional processes and the best practices. Factor Shared Practice is about collaboration with colleagues and factor Supportive Conditions that are necessary in order to accept and embrace change within school communities are identified. This includes both logistical supports, such as scheduling and resources, and social and cognitive supports, such as opportunity, leadership and communication. Professional learning communities have been held up as powerful structures for teachers' continuing professional development. The factor shaped the PLC's model could guide the development of PLCs within the context of school improvement initiatives.

Conclusion

Initiating and sustaining the PLC model concept requires hard work. A school staff must focus on learning rather than teaching, work collaboratively on matters related to learning, and hold its members accountable for the kind of results that fuel continual improvement. When educators work hard to implement these principles, their collective ability to help all students learn will improve.

The study of these factors is important to clarify the strengths and weaknesses that should be considered by the authorities. This will facilitate the relevant parties to measure for improvement in the event of weaknesses and to promote in order to be expended and implemented. In conclusion, this model of PLC will help in achieving the national vision and agenda of the national education policy.

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